

FIG. 1

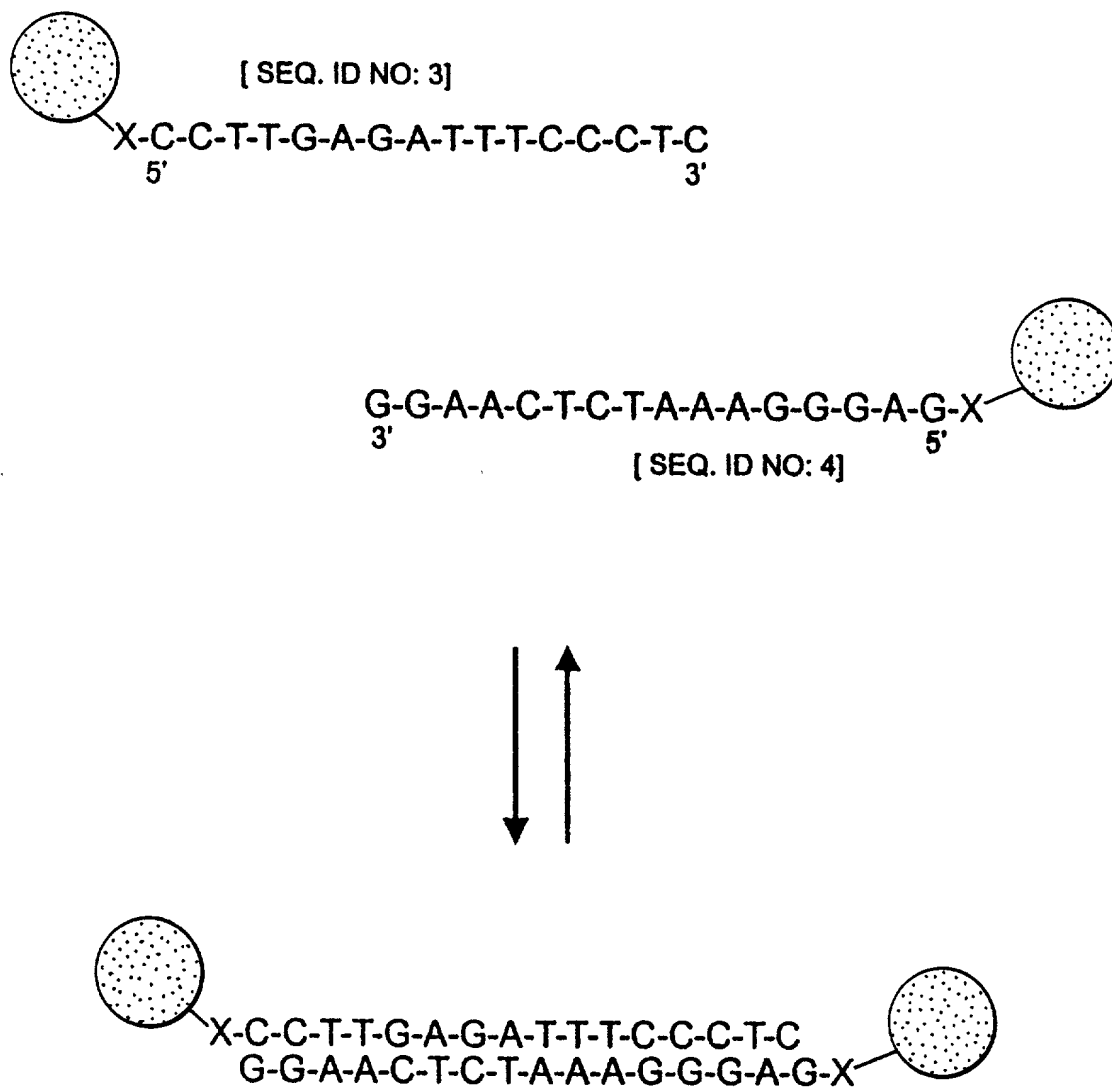


FIG. 2

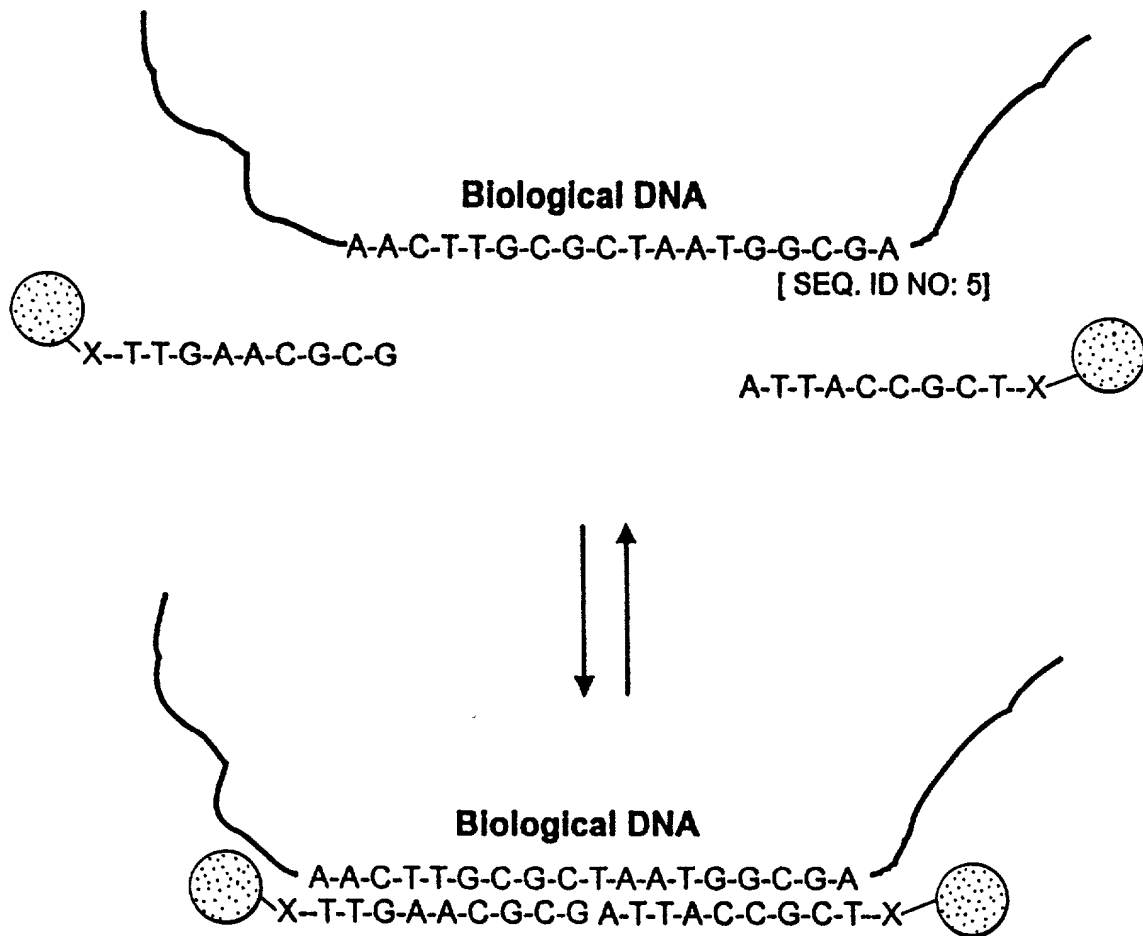


FIG. 3

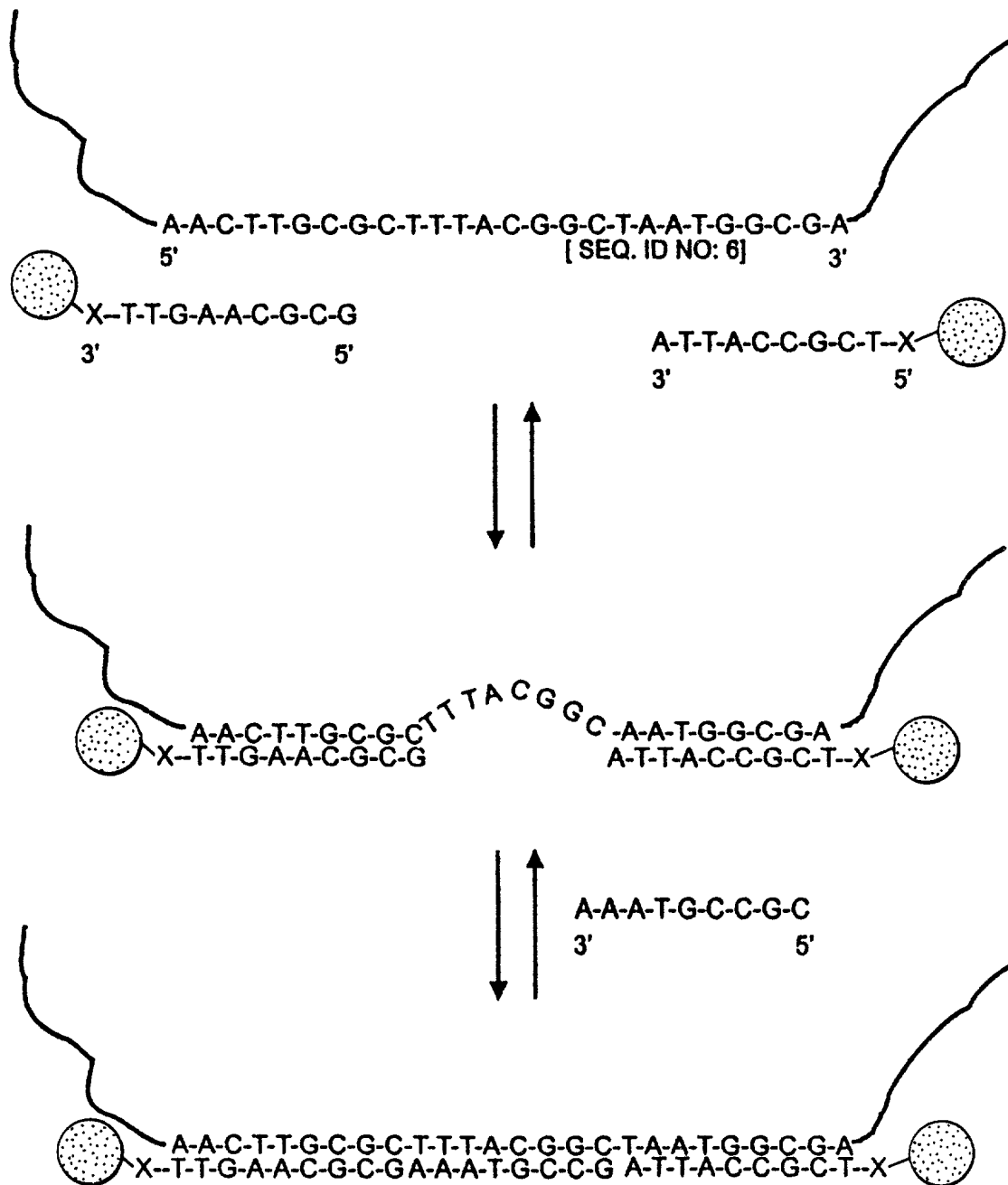


FIG. 4

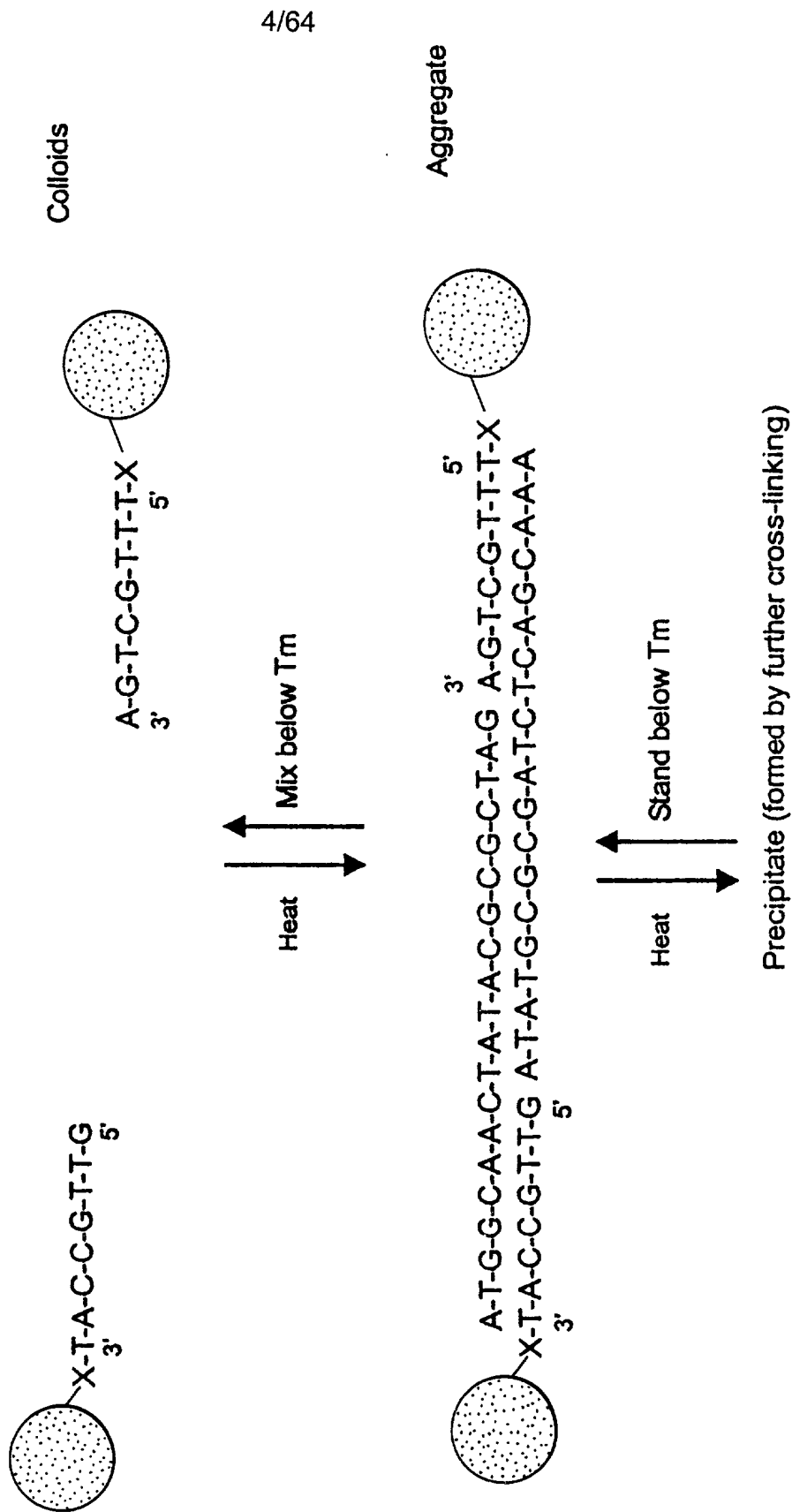
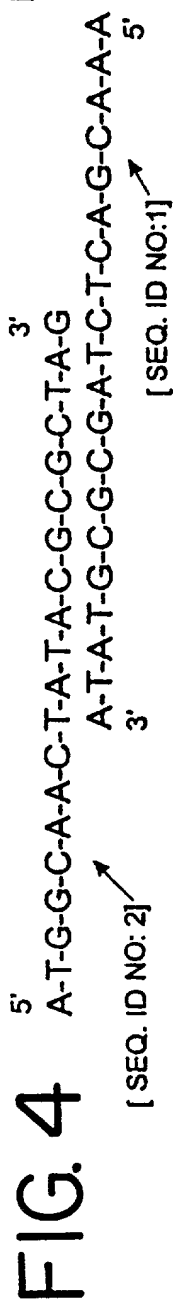


FIG. 5

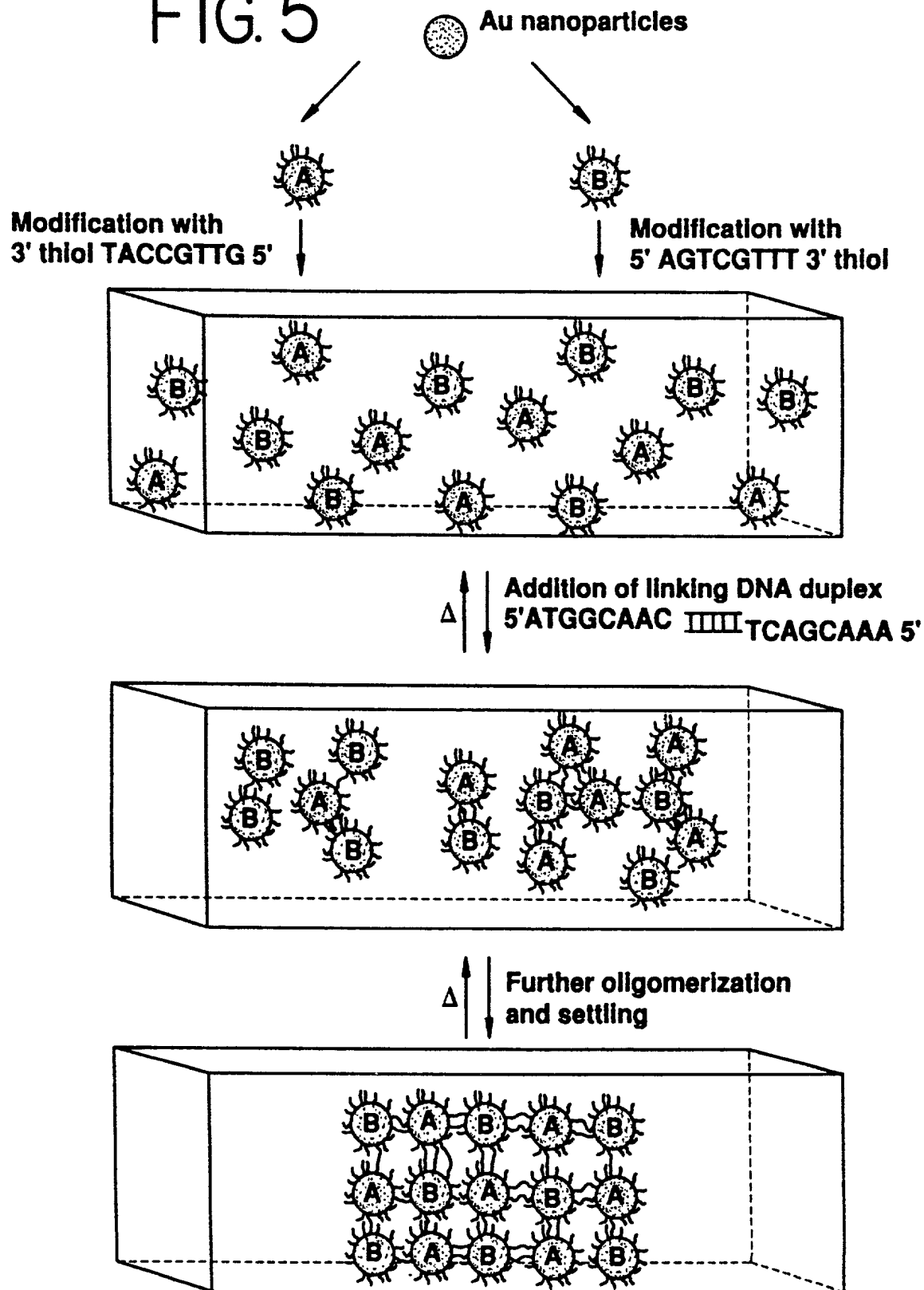




FIG. 7

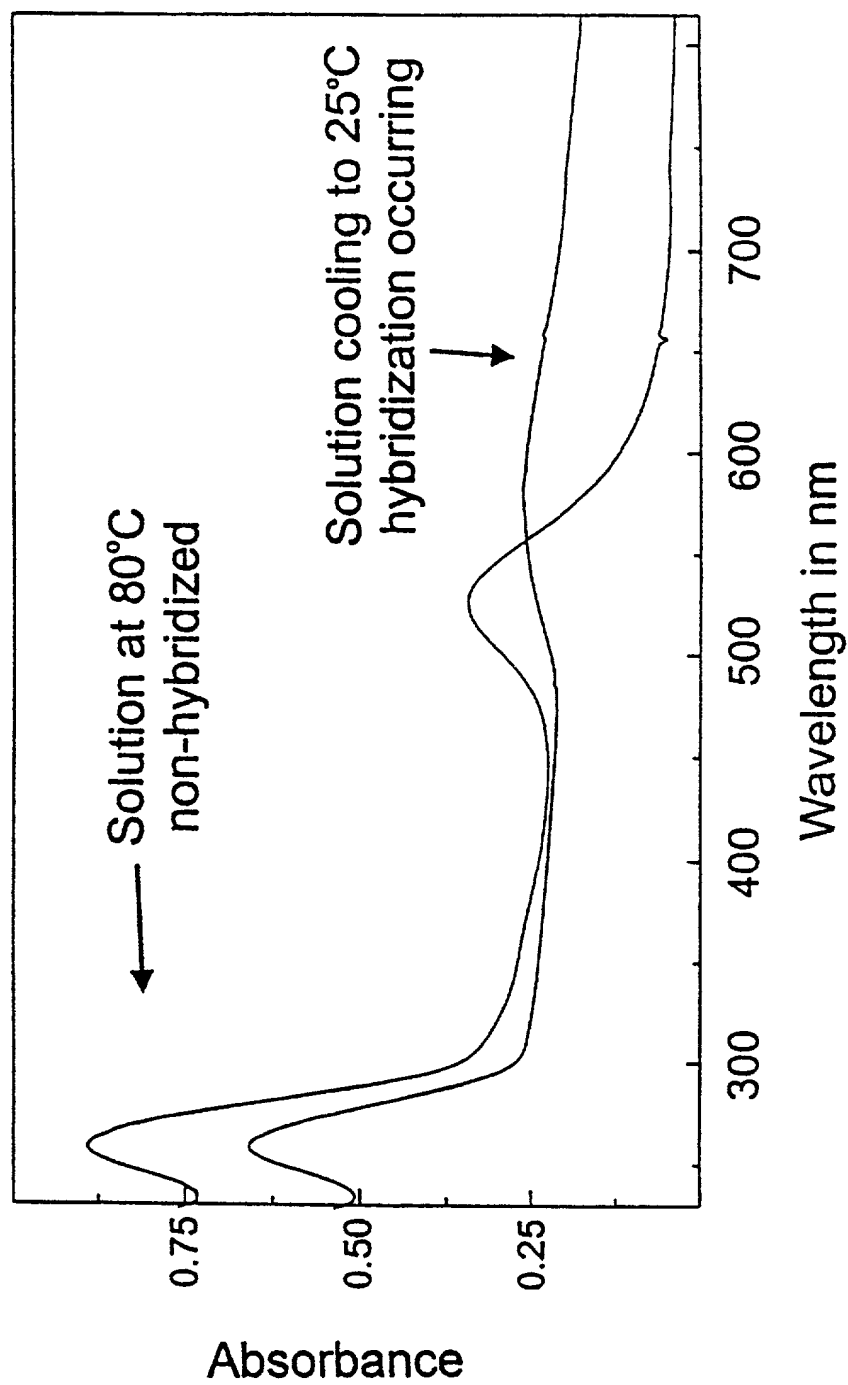


FIG. 8B

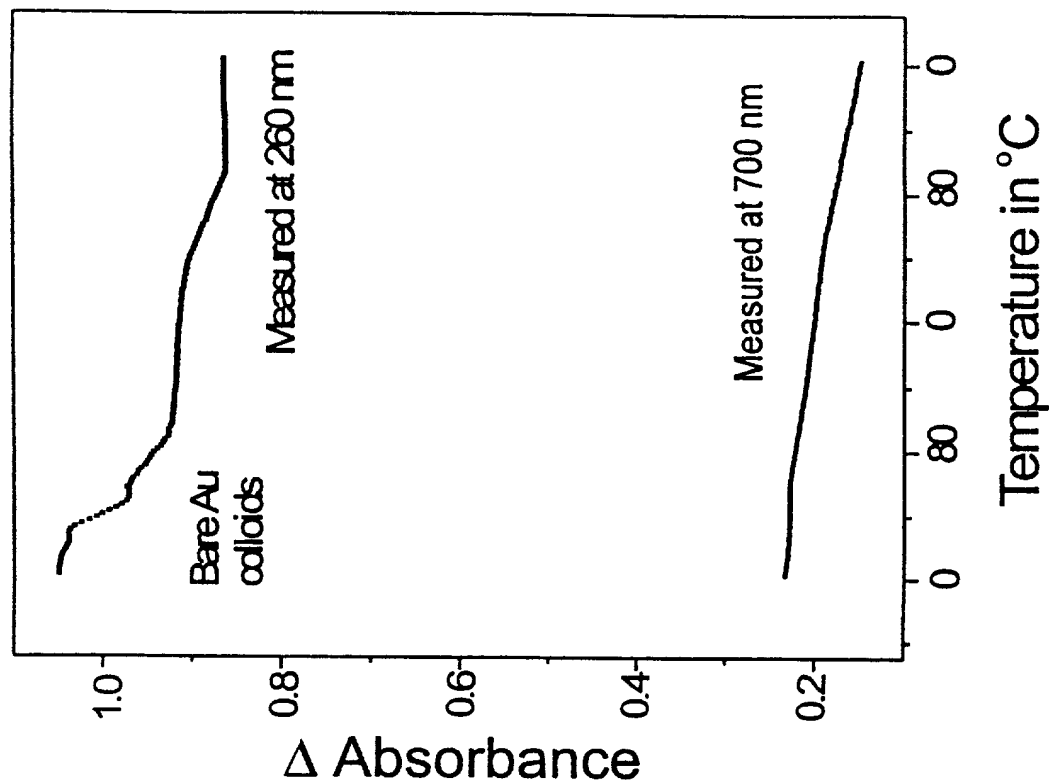
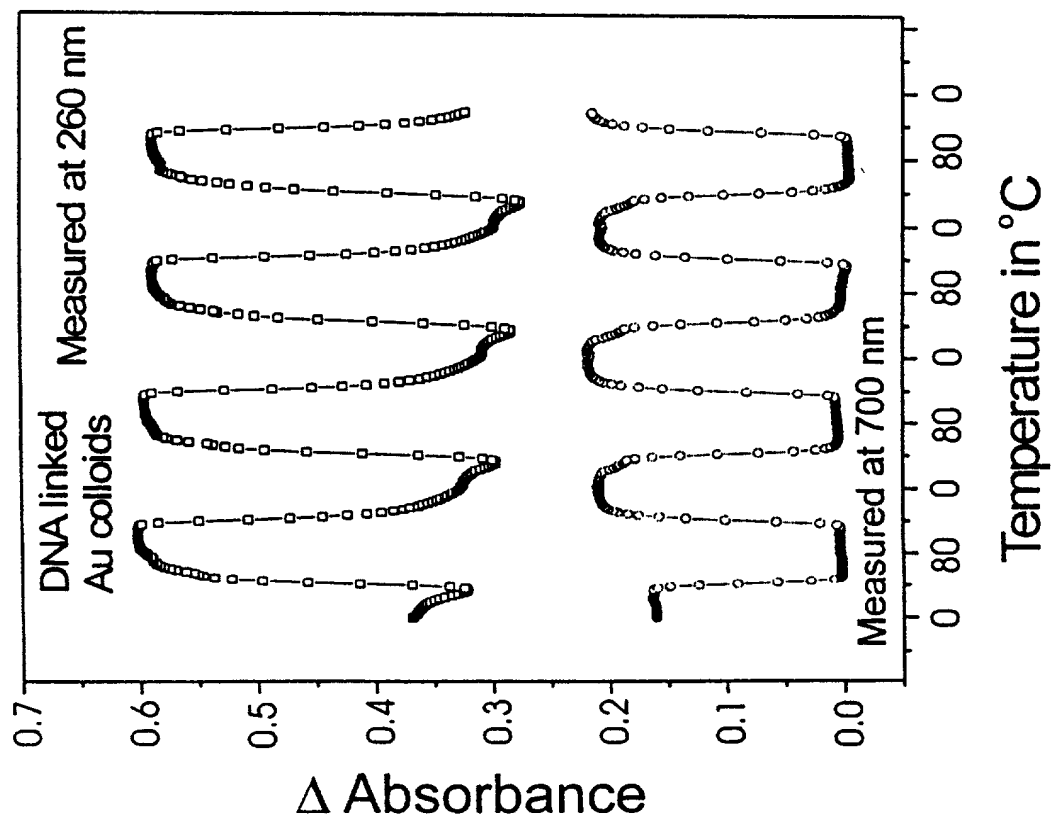


FIG. 8A



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FIG. 9A

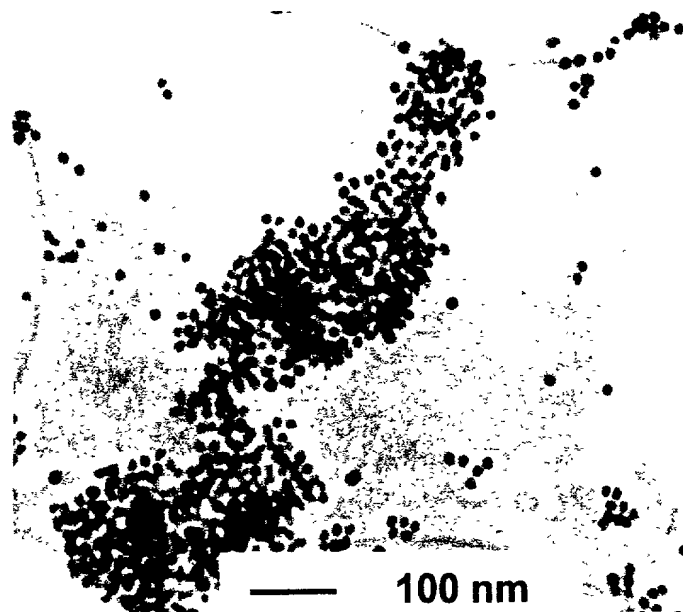
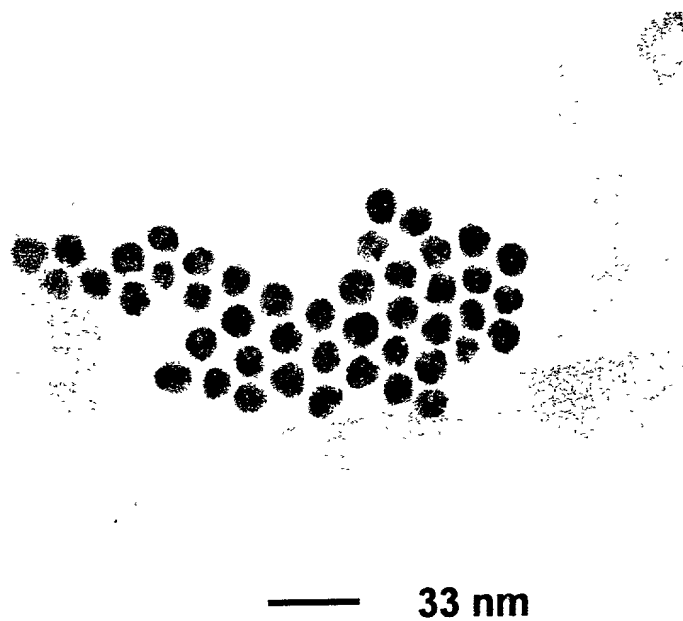


FIG. 9B



1000898.120701

FIG. 10

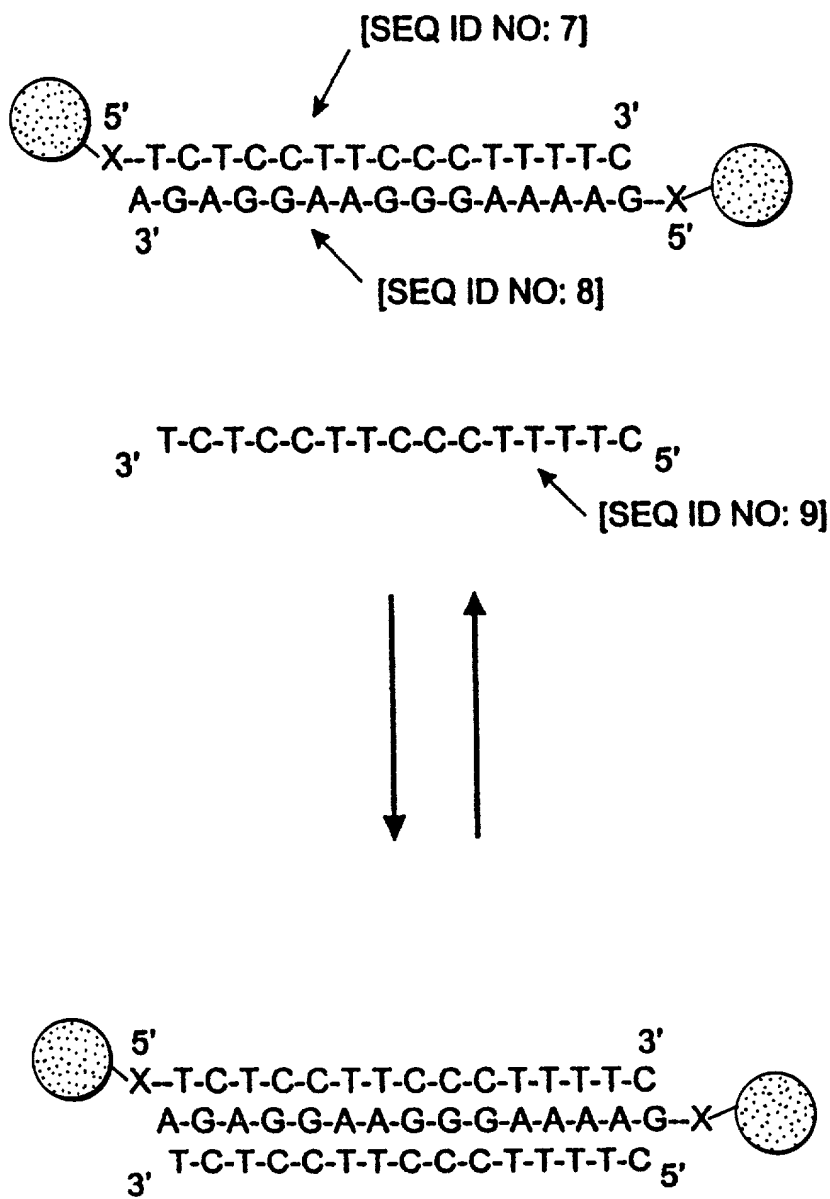


FIG. 11

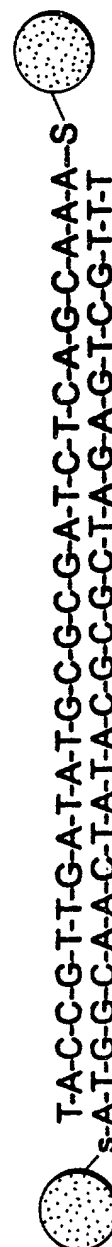
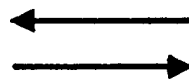
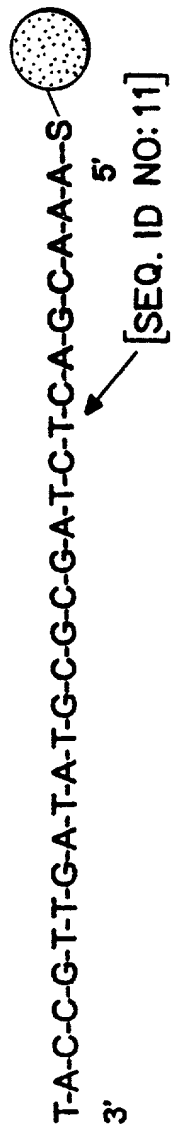
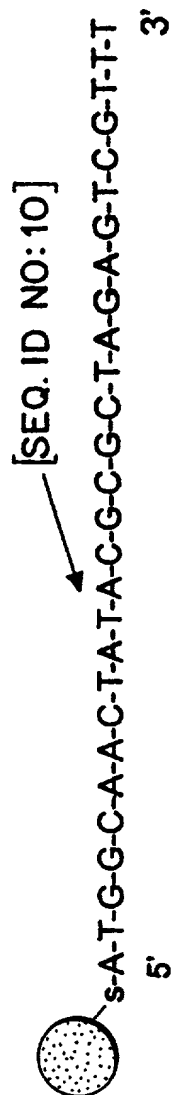


FIG. 12A

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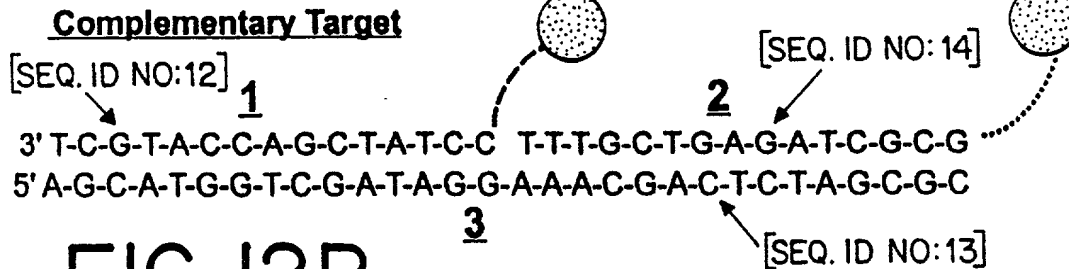


FIG. 12B

Probes without Target



FIG. 12C

Half Complementary Target

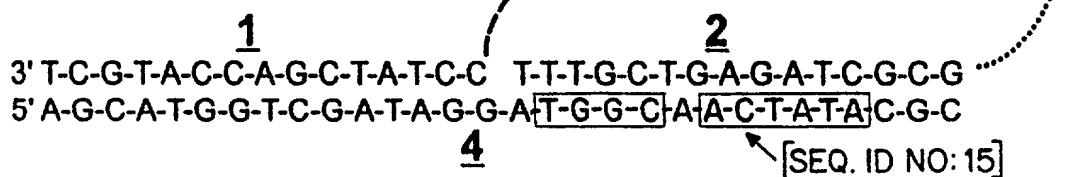


FIG. 12D

Target - 6 bp

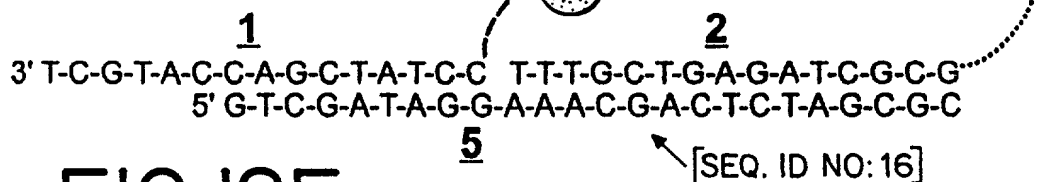


FIG. 12E

One bp Mismatch

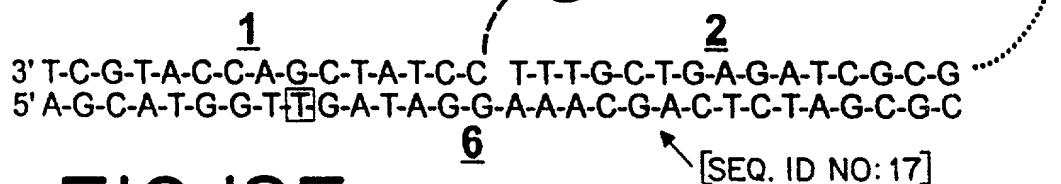


FIG. 12F

Two bp Mismatch

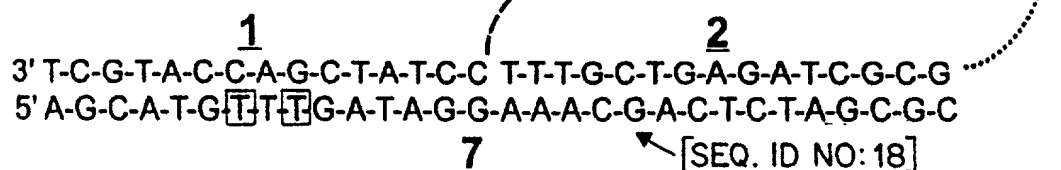


FIG. 13A

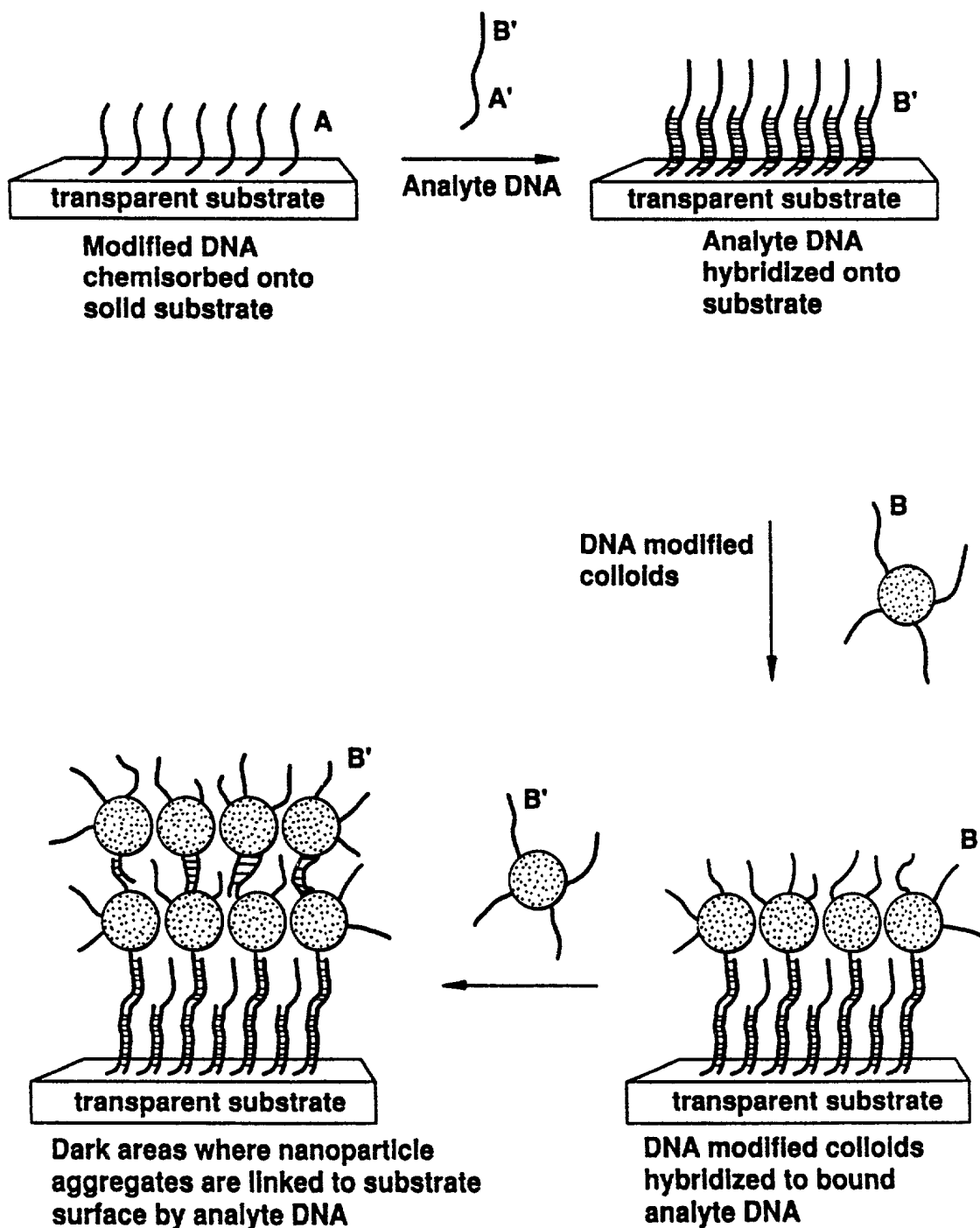


FIG. 13B

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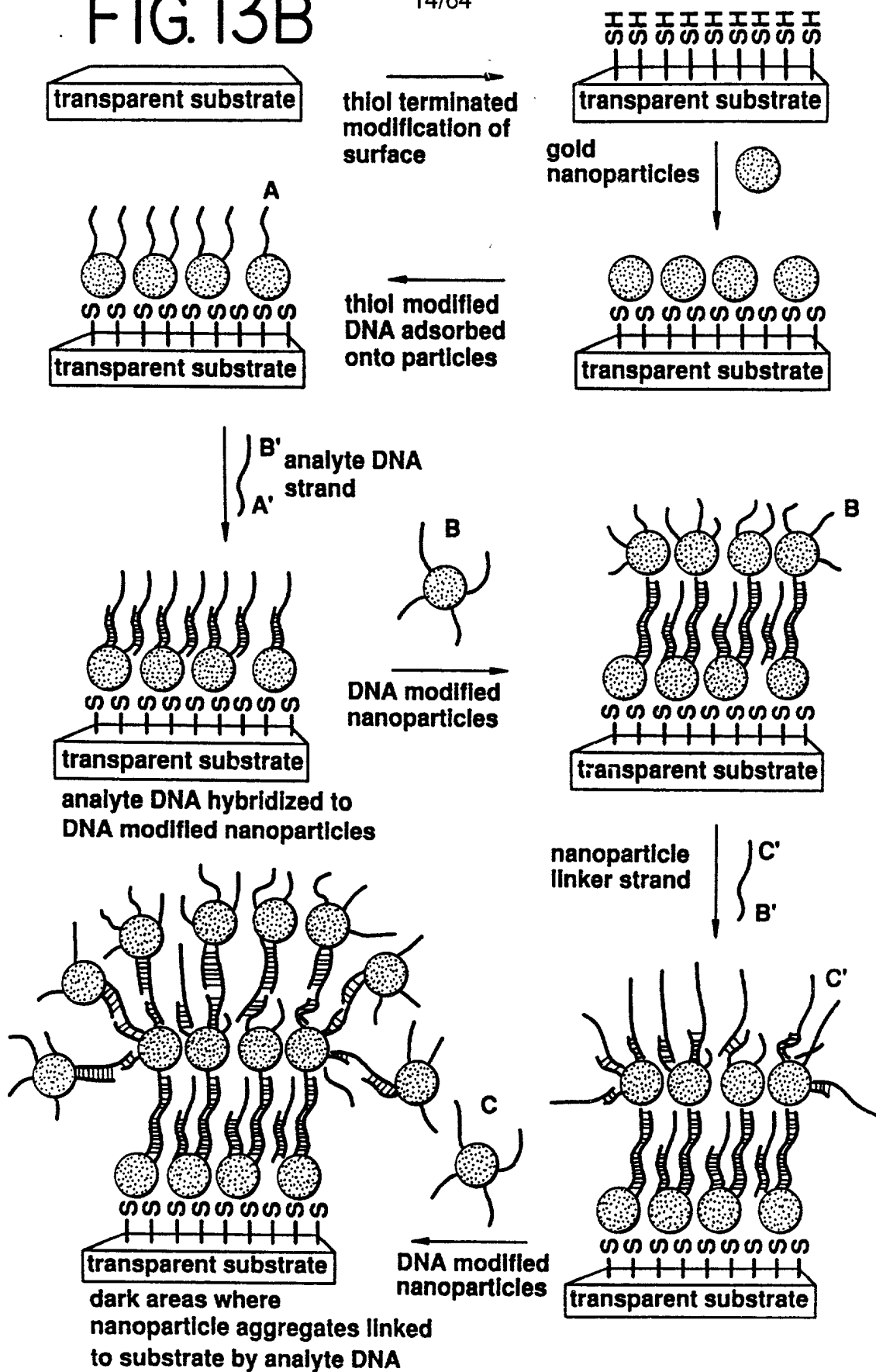


FIG. 14A

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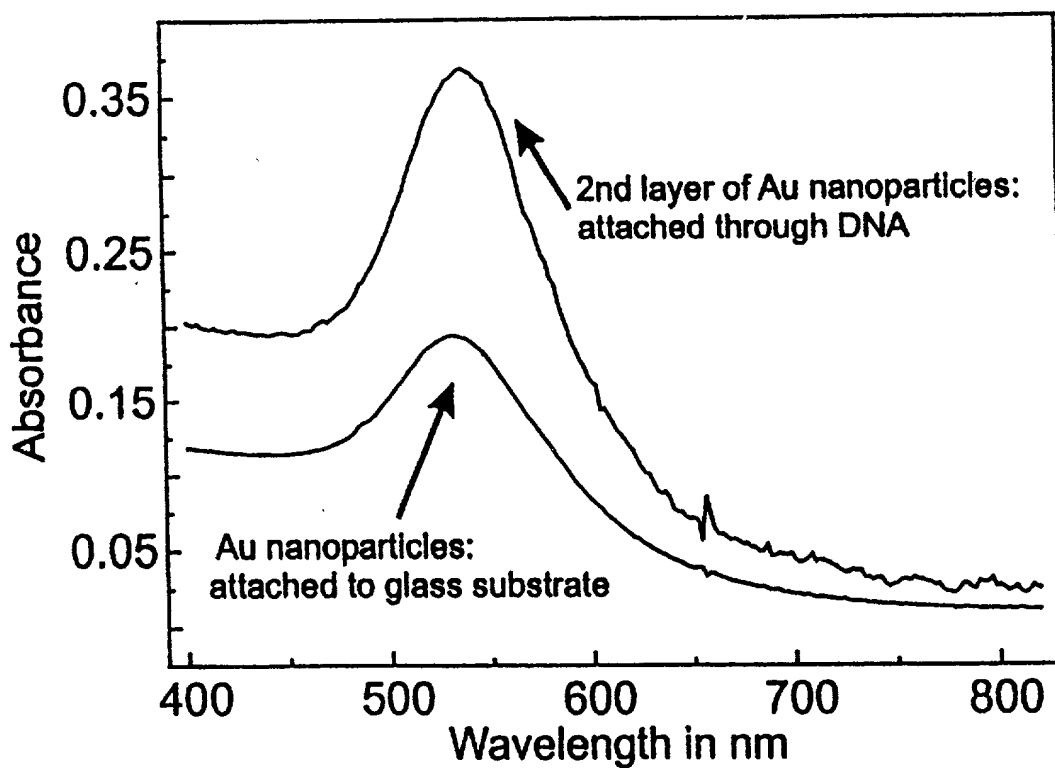


FIG. 14B

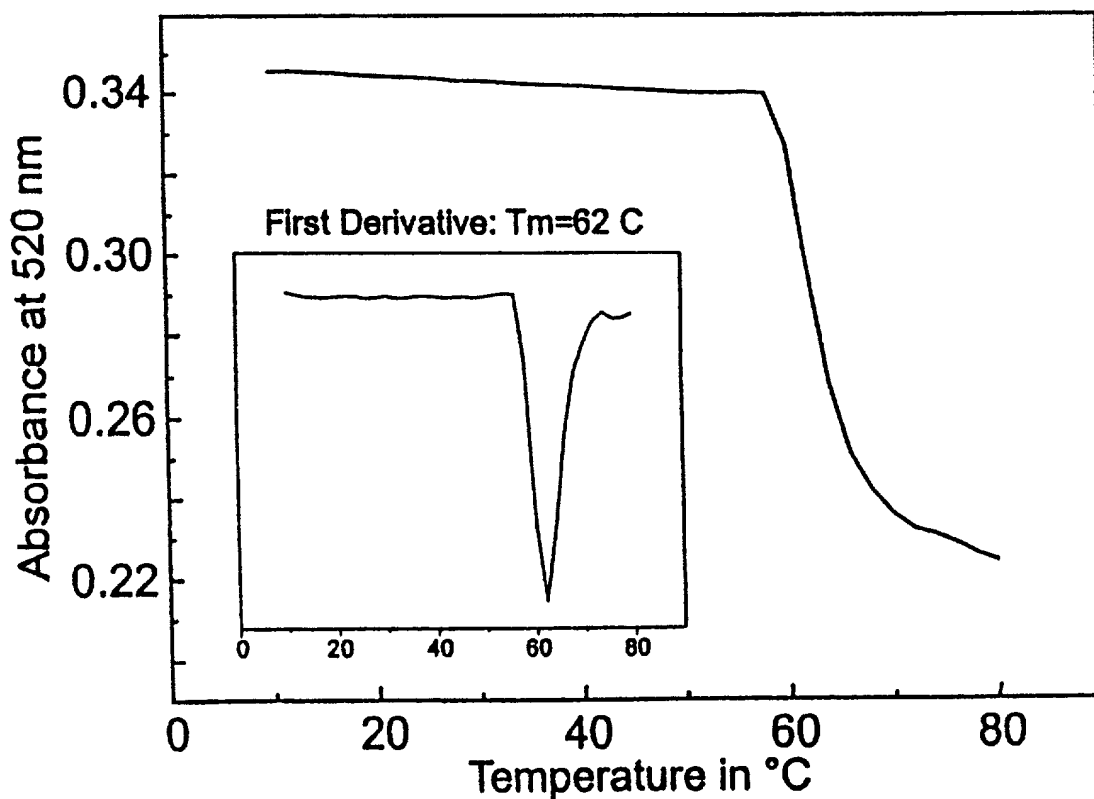


FIG. 15B

A Probes with No Target SEQ ID NO:19
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S SEQ ID NO:20
1 2

5' TAC-GAG-TTG-AGA-GAG-TGC-CCA-CAT 3' SEQ ID NO:21
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

Tm=53.5°C

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3' SEQ ID NO:22
 S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S
1 2

T_m=50.4°C

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCT 3' SEQ ID NO:23
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

T_m=46.2°C

5' TAC-GAG-TTG-AGA-CTC-CTG-AAT-GCG 3' SEQ ID NO:24
S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

T_m=51.6°C

ONE Base Deletion

7

SEQ ID NO:25

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GC□ 3'

1 2

S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

T_m=50.2°C

5' TAC-GAG-TTG-AGA-CAT-CCT-GAA-TGC-G 3' SEQ ID NO:26
 S-ATG-CTC-AAC-TCT TA-GGA-CTT-ACG-C-S
 1 2

FIG. 16A

24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'
—S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S —
1 2

FIG. 16B

48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'
—S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S —
1 2

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FIG. 16C

72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'
—S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S —
1 2

FIG. 17A

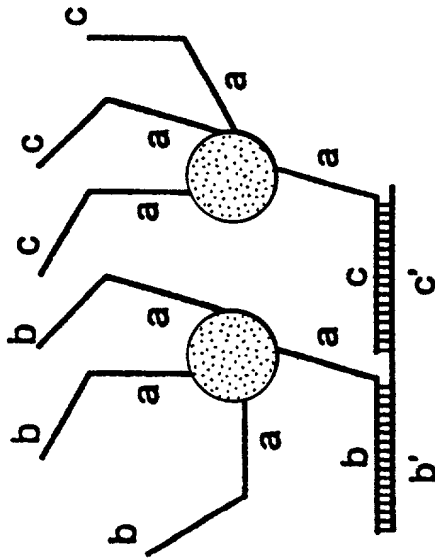


FIG. 17B

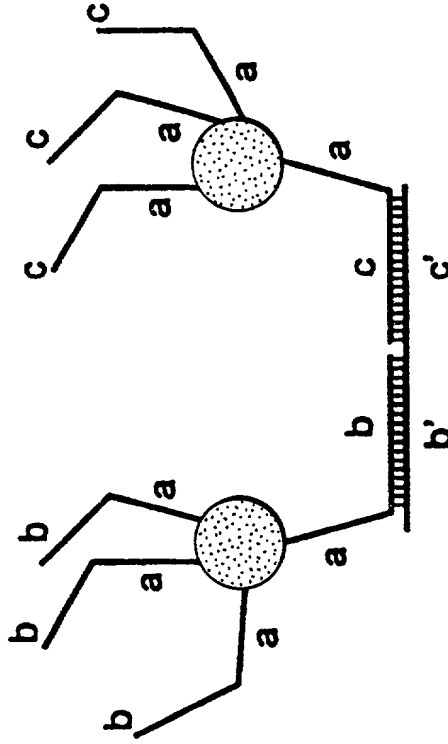


FIG. 17C

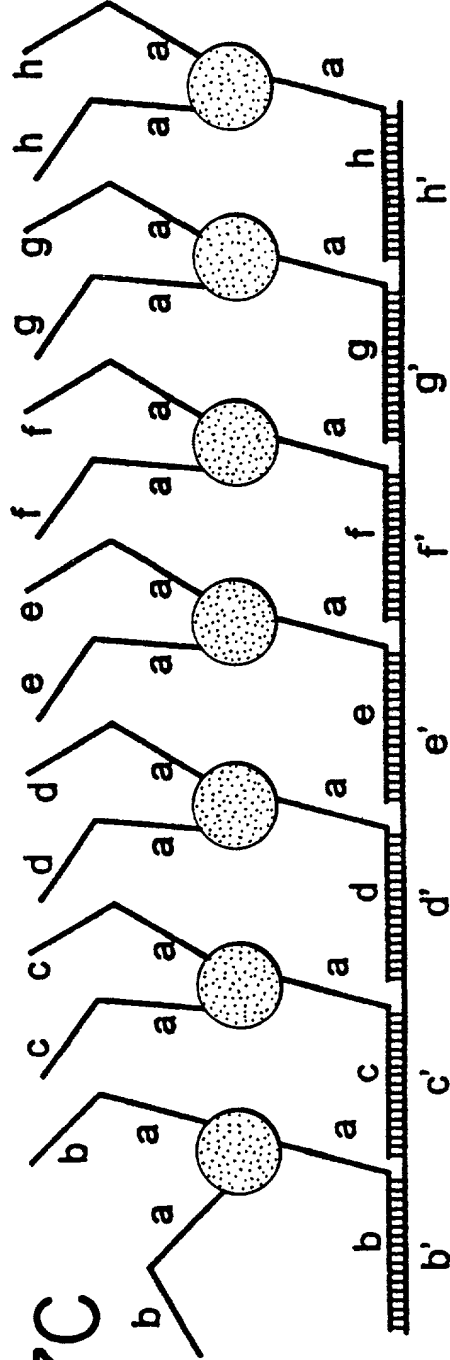


FIG. 17D

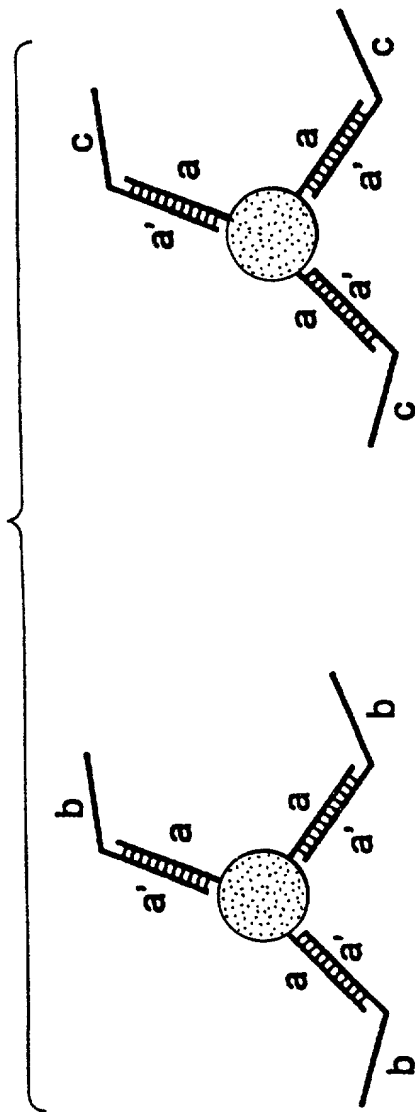


FIG. 17E

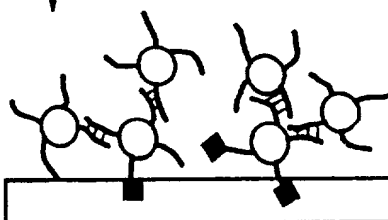
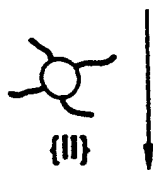
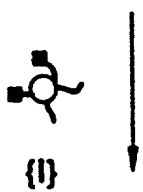


FIG. 19A

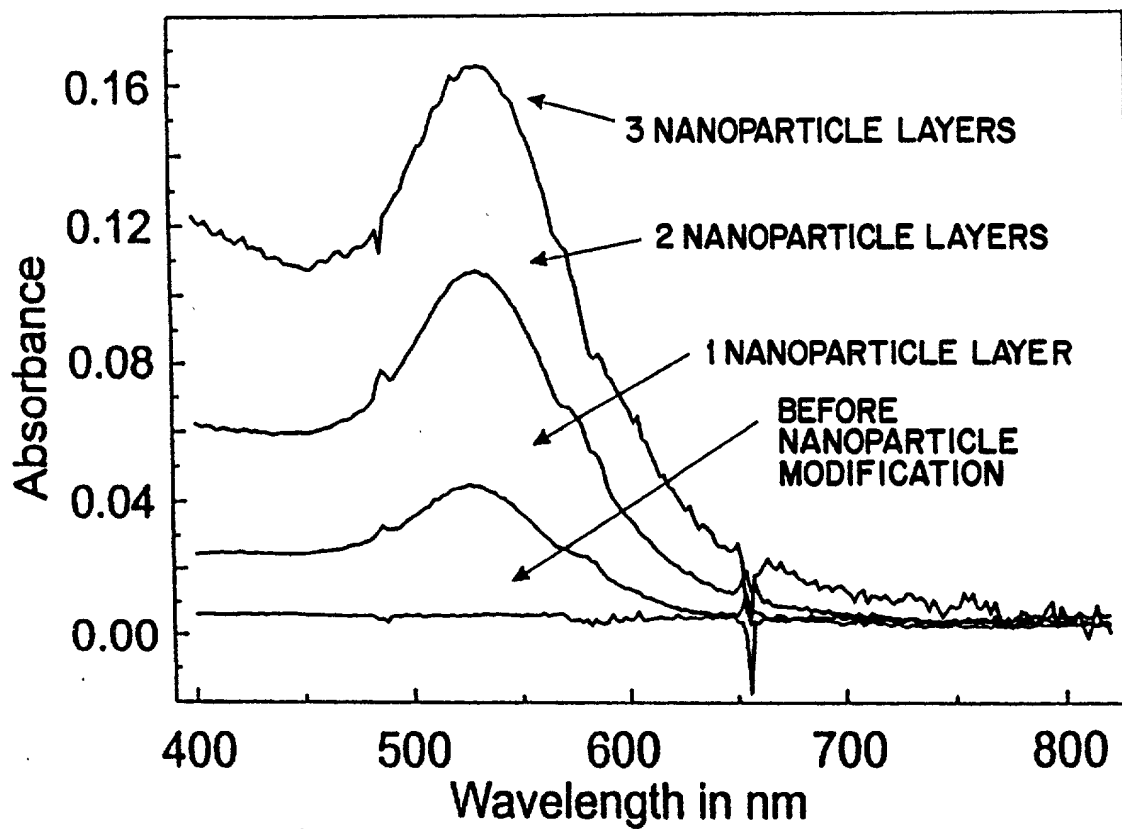


FIG. 19B

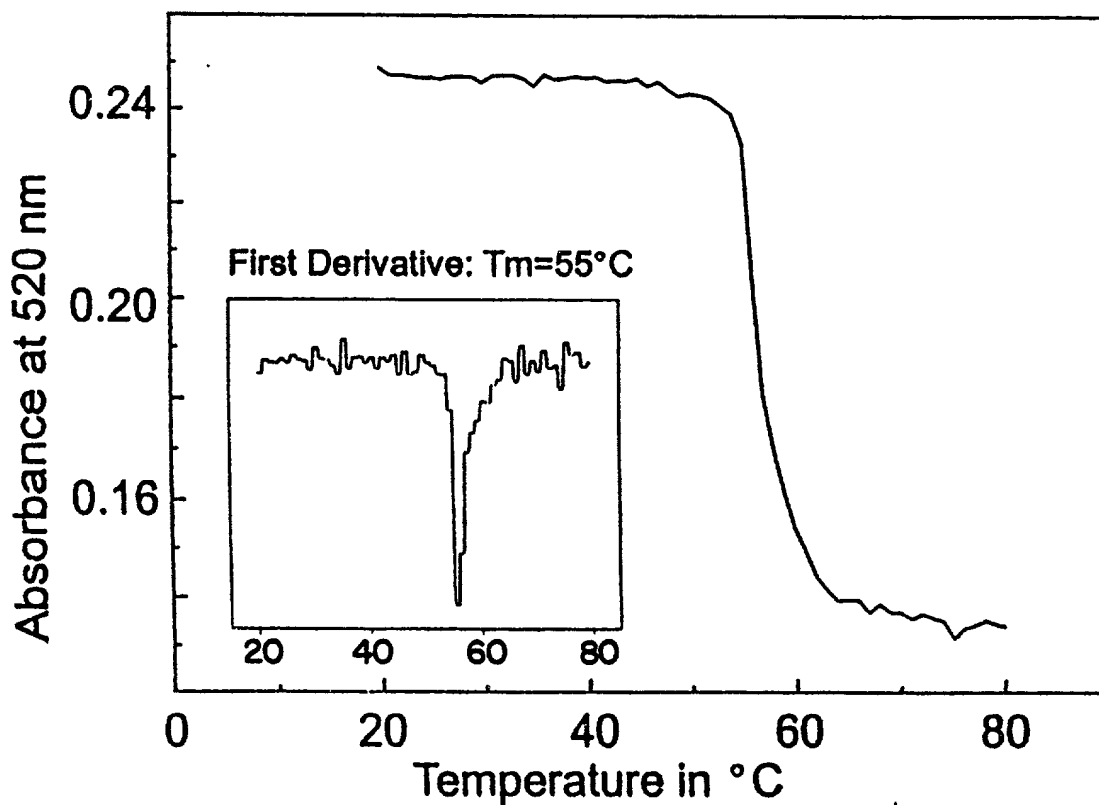


FIG. 20A

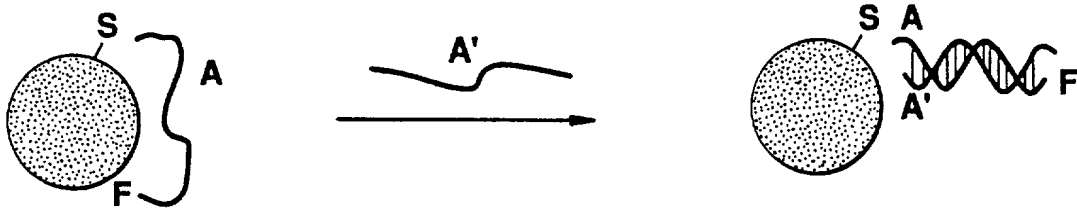


FIG. 20B

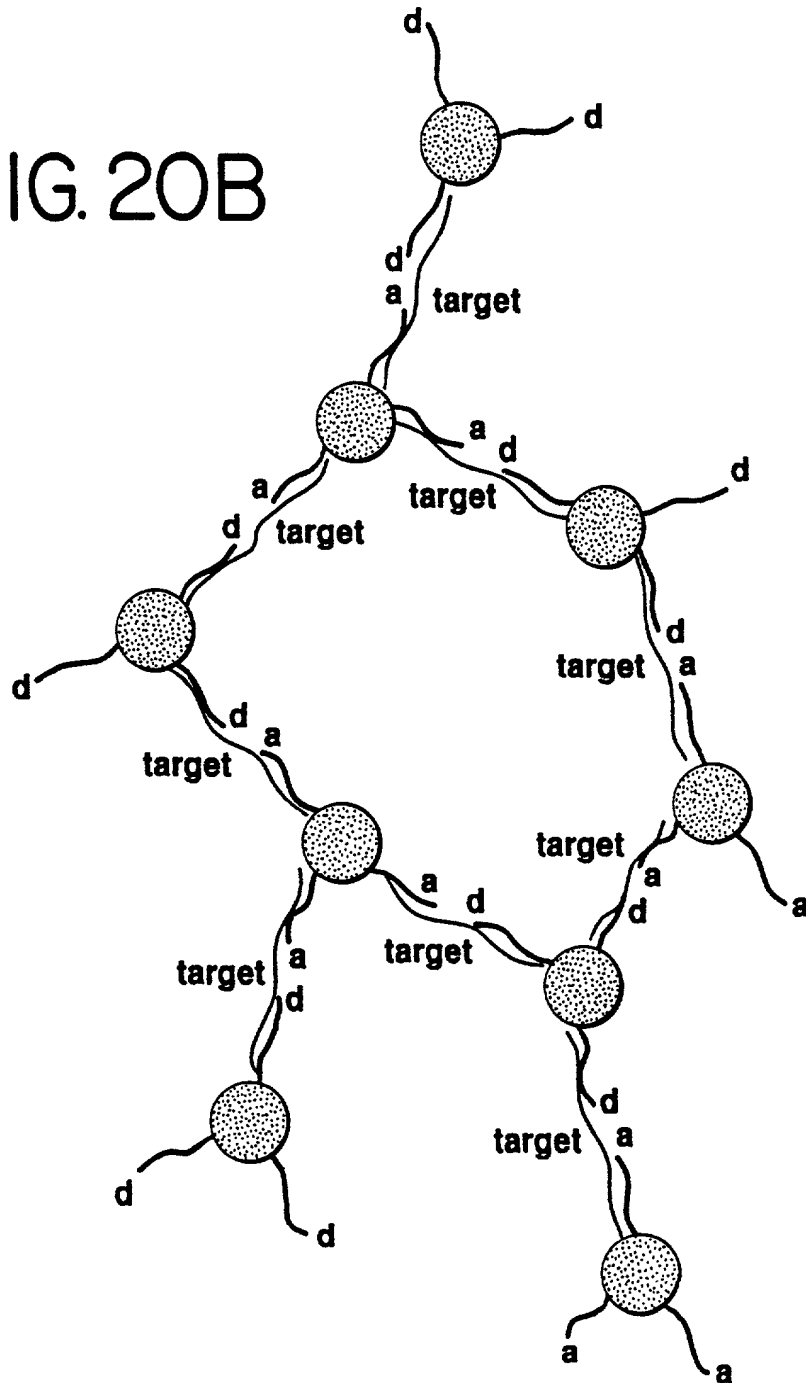


FIG. 21

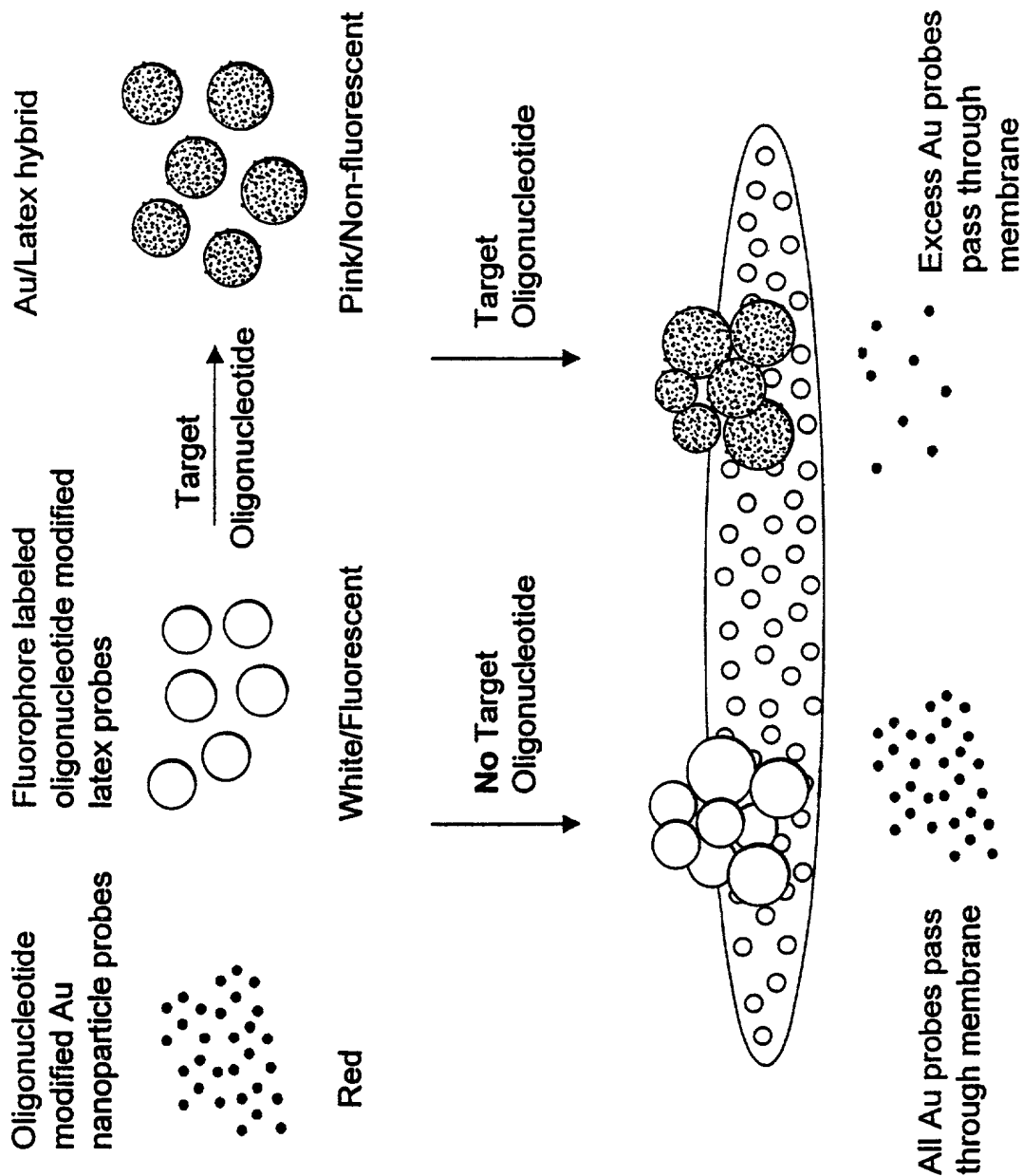
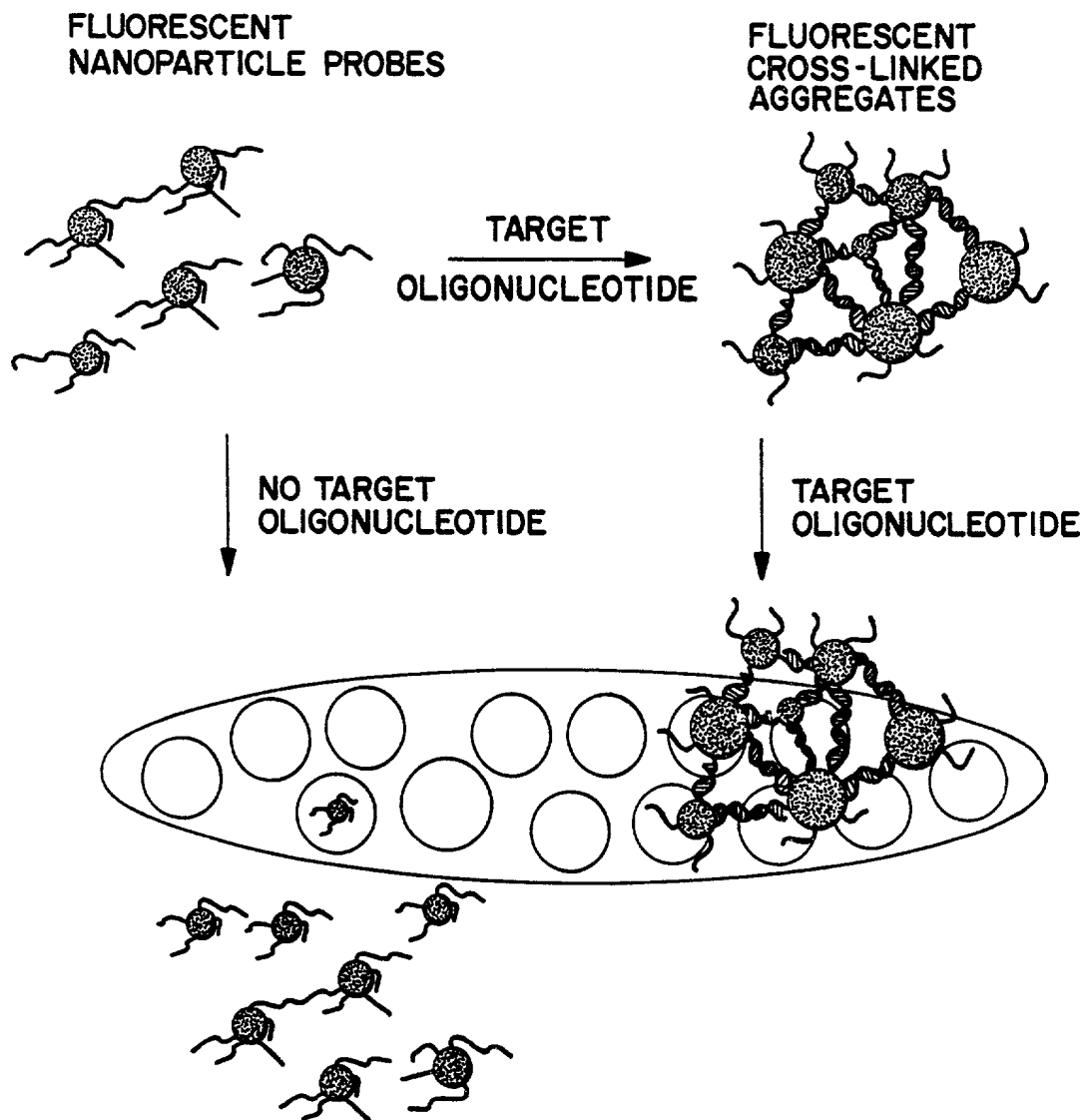


FIG. 22



THE FLUORESCENT NANOPARTICLE
PROBES PASS THROUGH THE
MEMBRANE

THE FLUORESCENT
CROSS-LINKED AGGREGATES
ARE RETAINED BY THE
MEMBRANE

FIG. 23

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO:36]

3' CTC CCT AAT AAC AAT

[SEQ ID NO:37]

3' TTA TAA CTA TTC CTA

[SEQ ID NO:38]

Oligonucleotide-Nanoparticle Probes

Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT

[SEQ ID NO:39]

3' A TCT CTT CAT TAA TTA AGC AGT TGT

[SEQ ID NO:40]

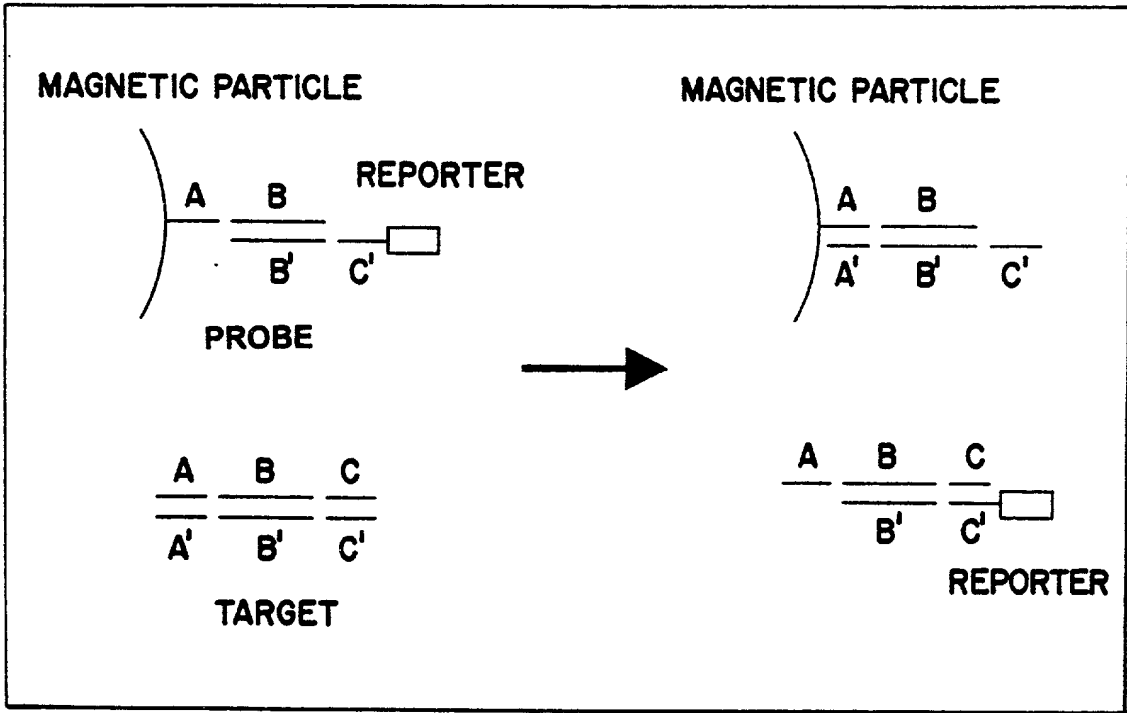
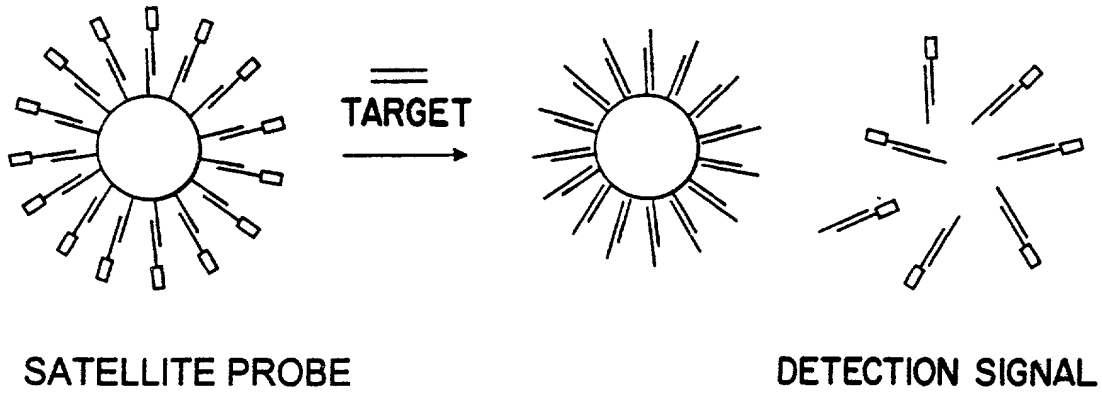
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT

[SEQ ID NO:41]

3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA

[SEQ ID NO:42]

FIG. 24



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FIG. 25A

1. \sim (TARGET)

2.

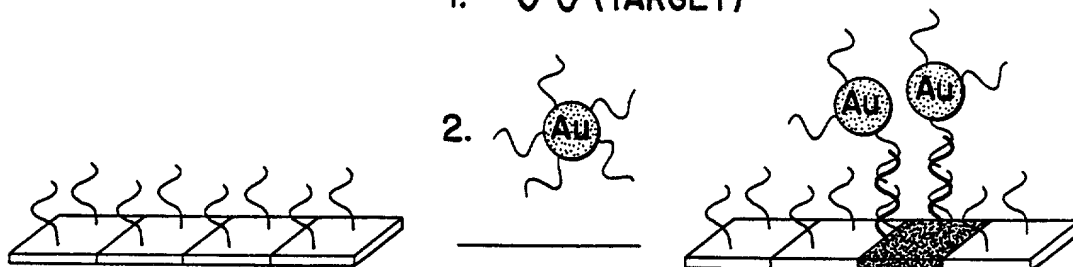


FIG. 25B

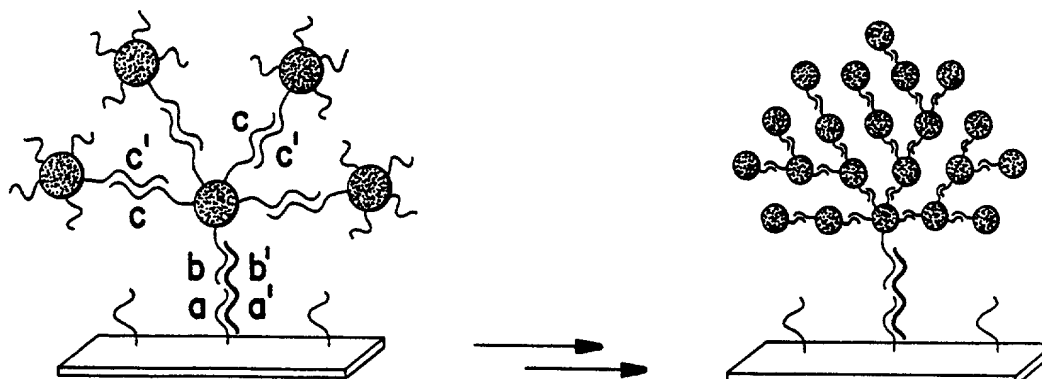
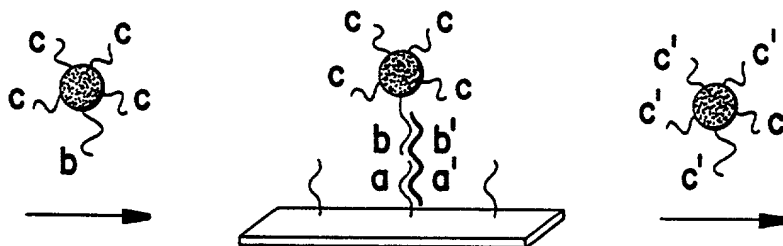
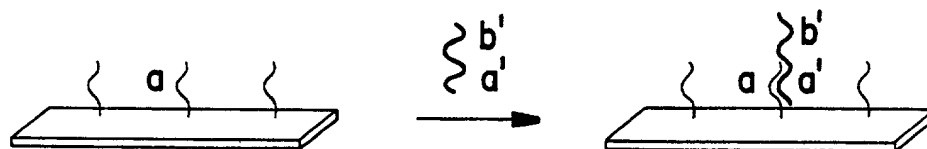


FIG. 26A

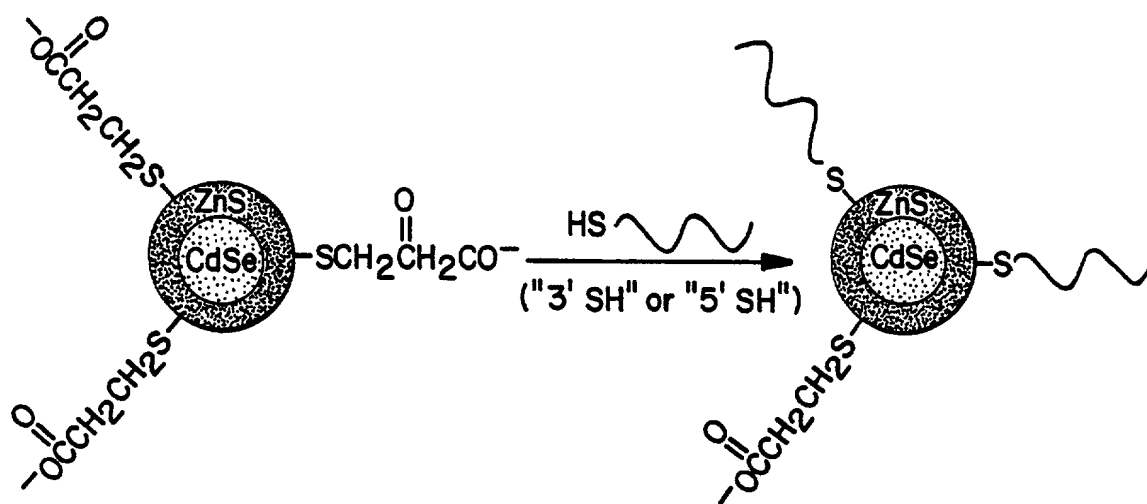
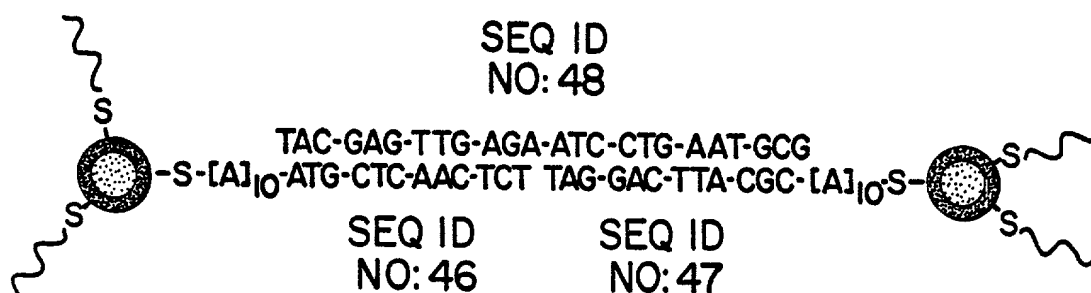


FIG. 26B



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FIG. 27A

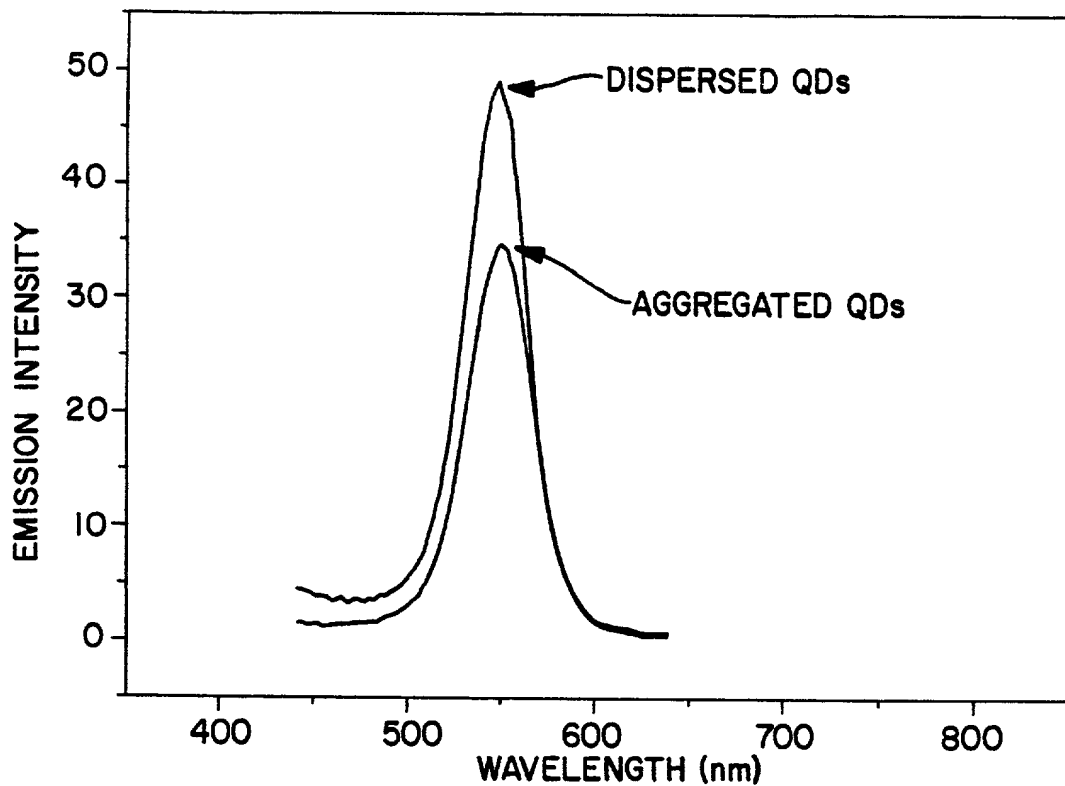


FIG. 27B

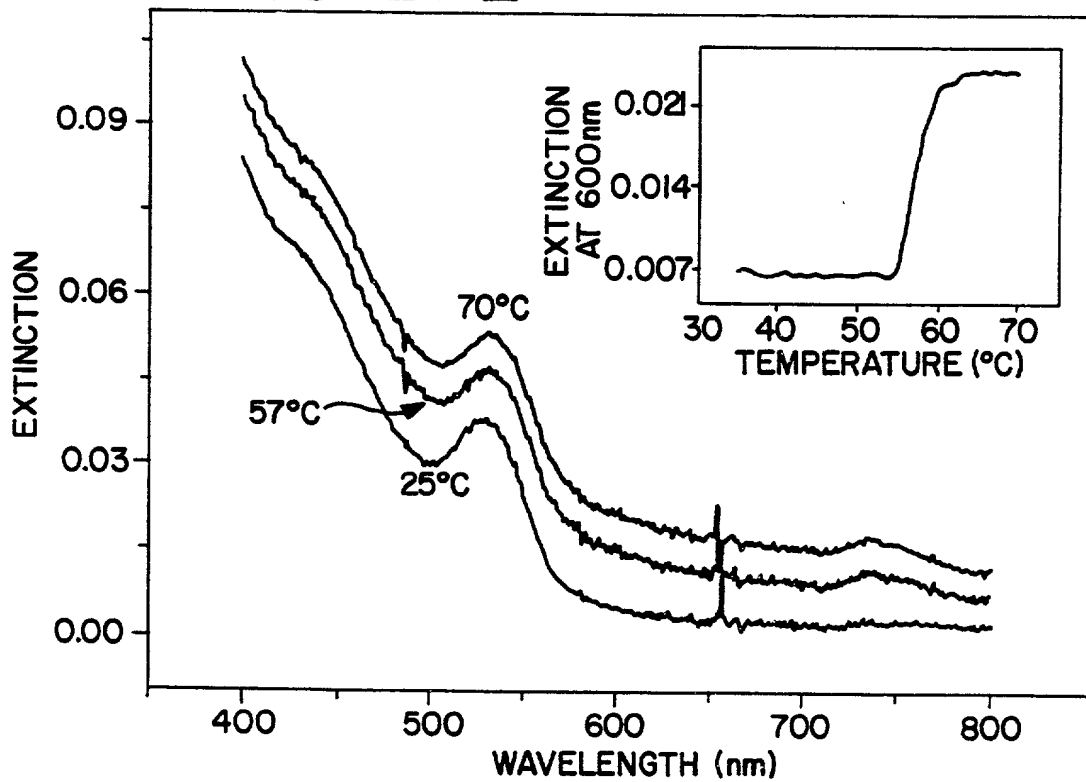


FIG. 27C

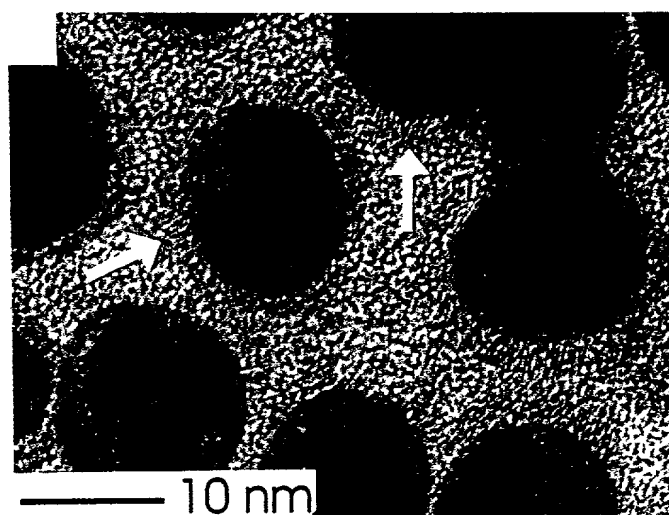


FIG. 27D

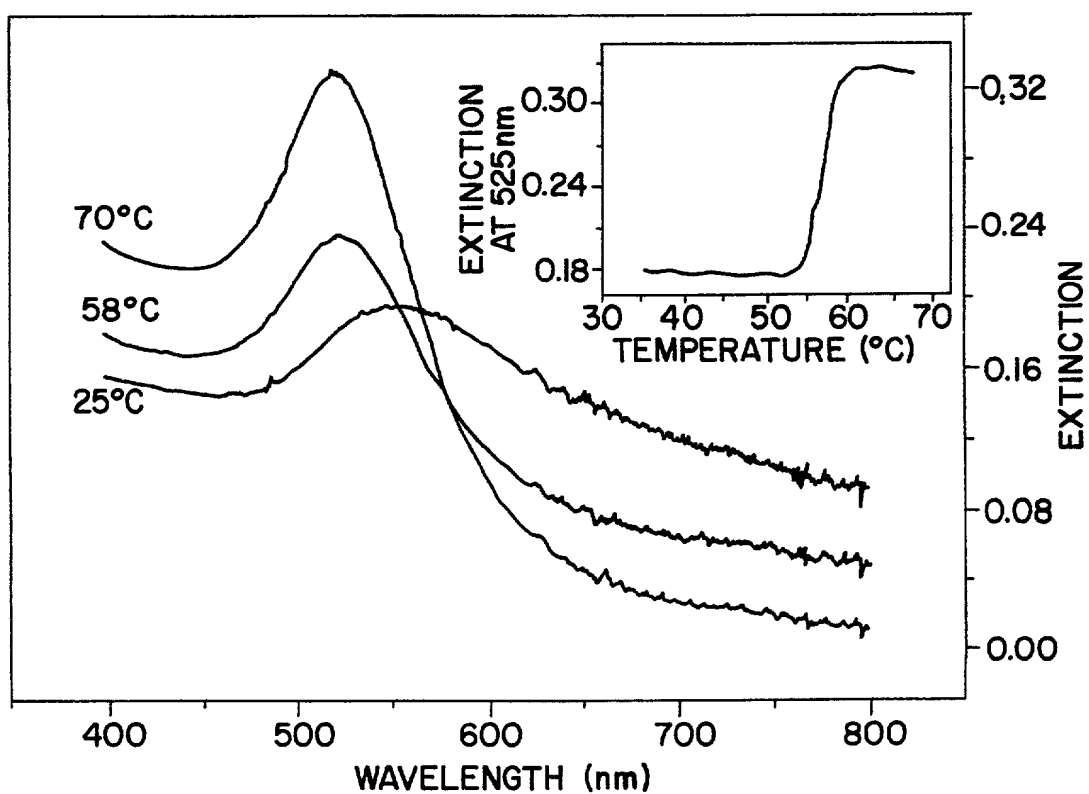


FIG. 28A

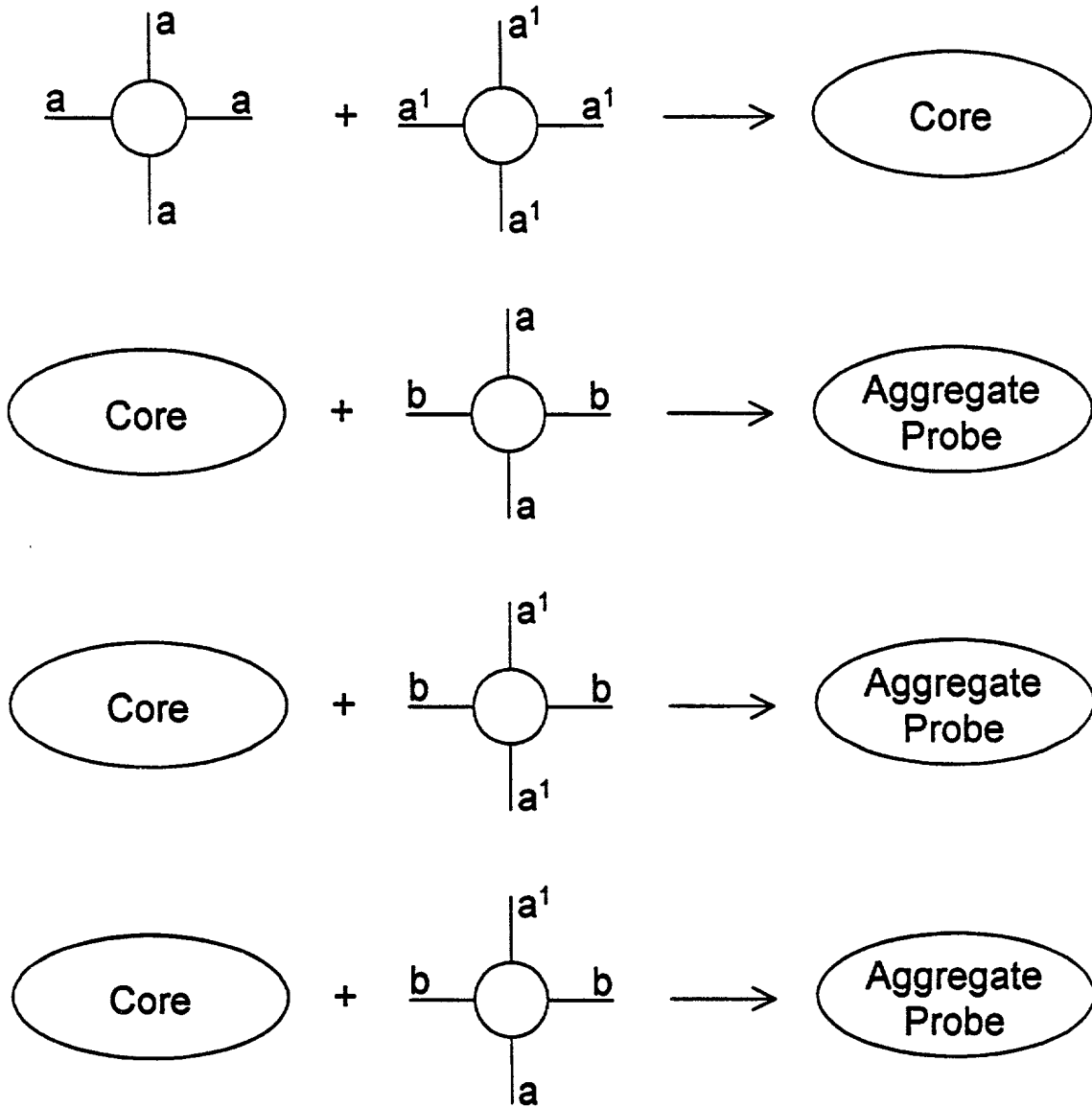


FIG. 28B

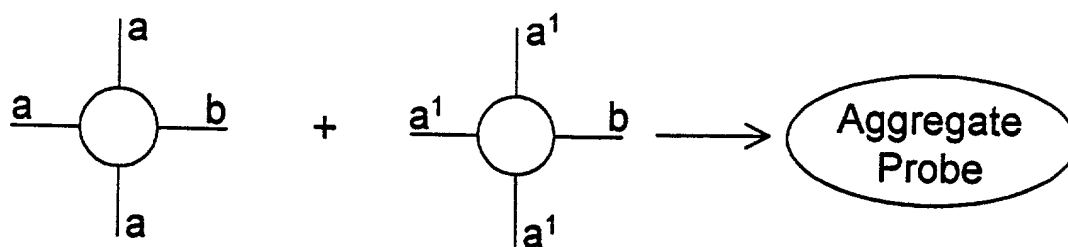


FIG. 28C

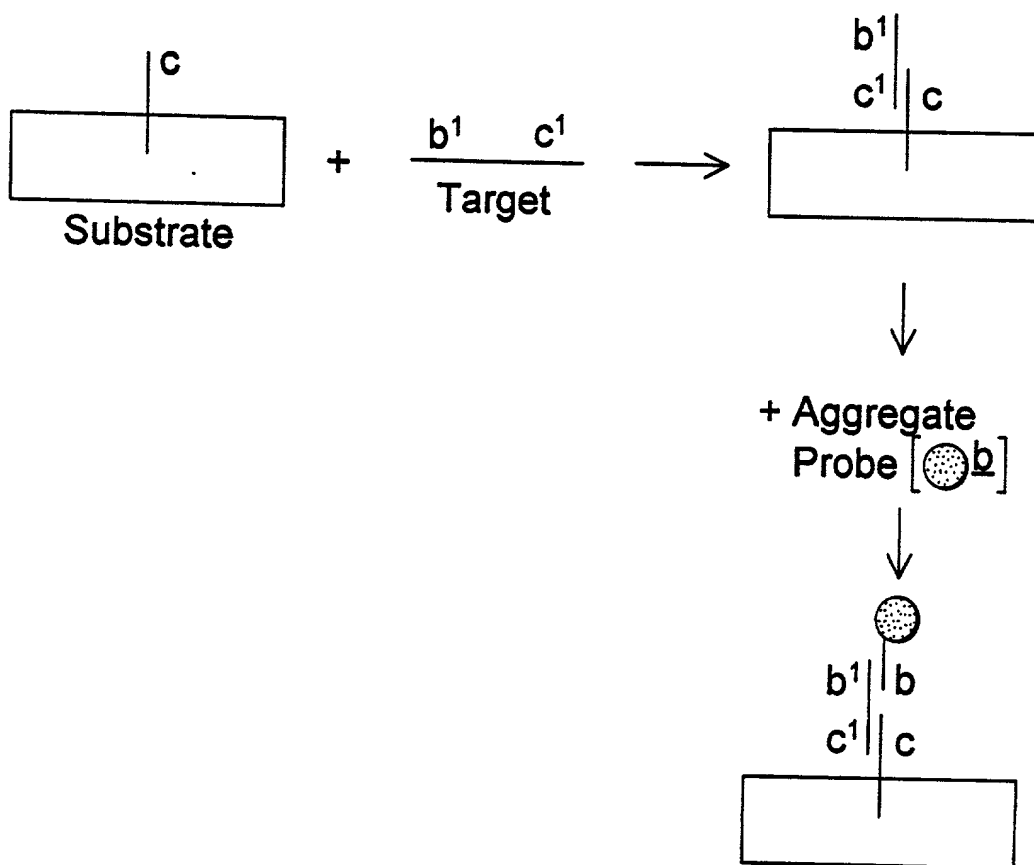
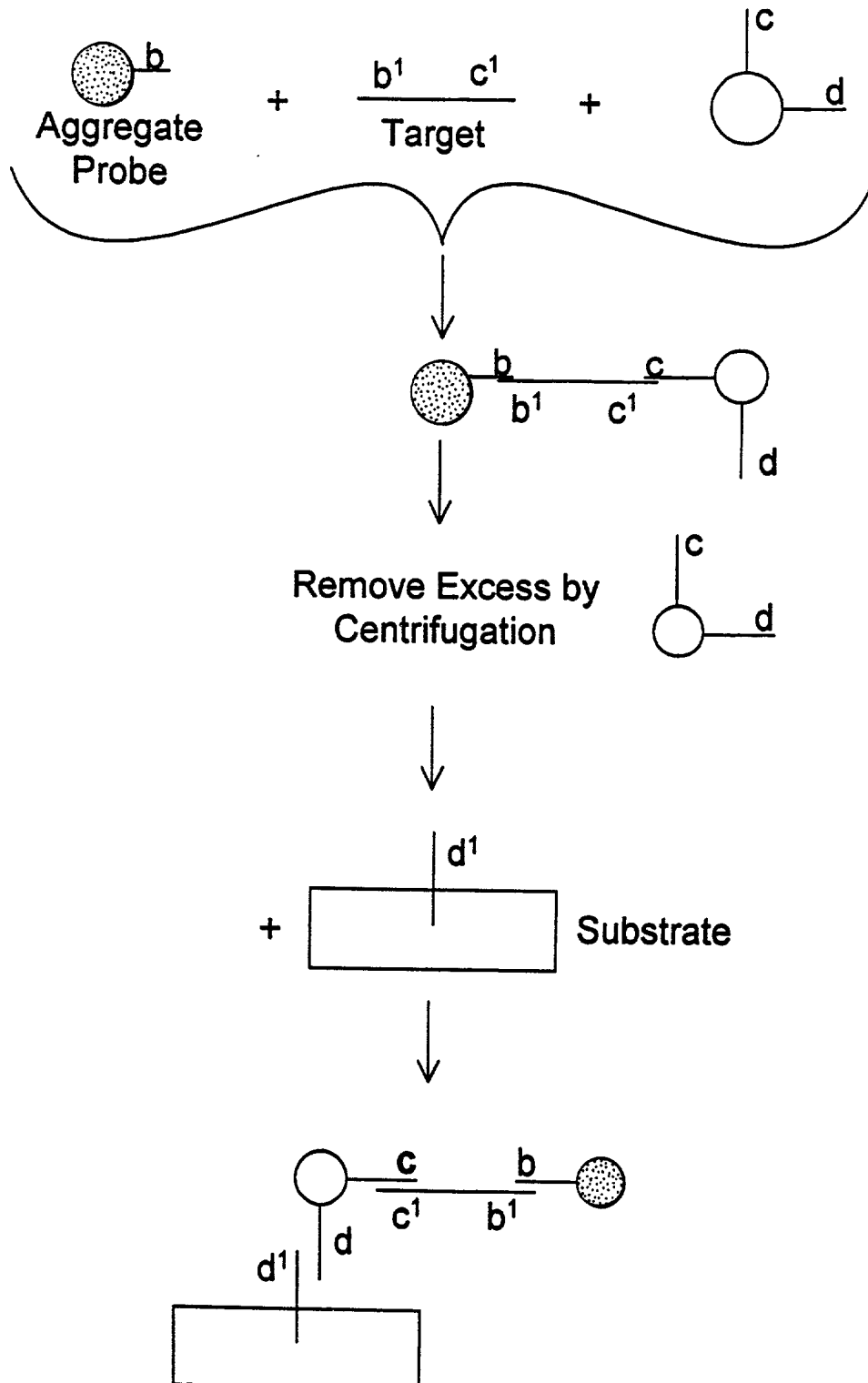


FIG. 28D



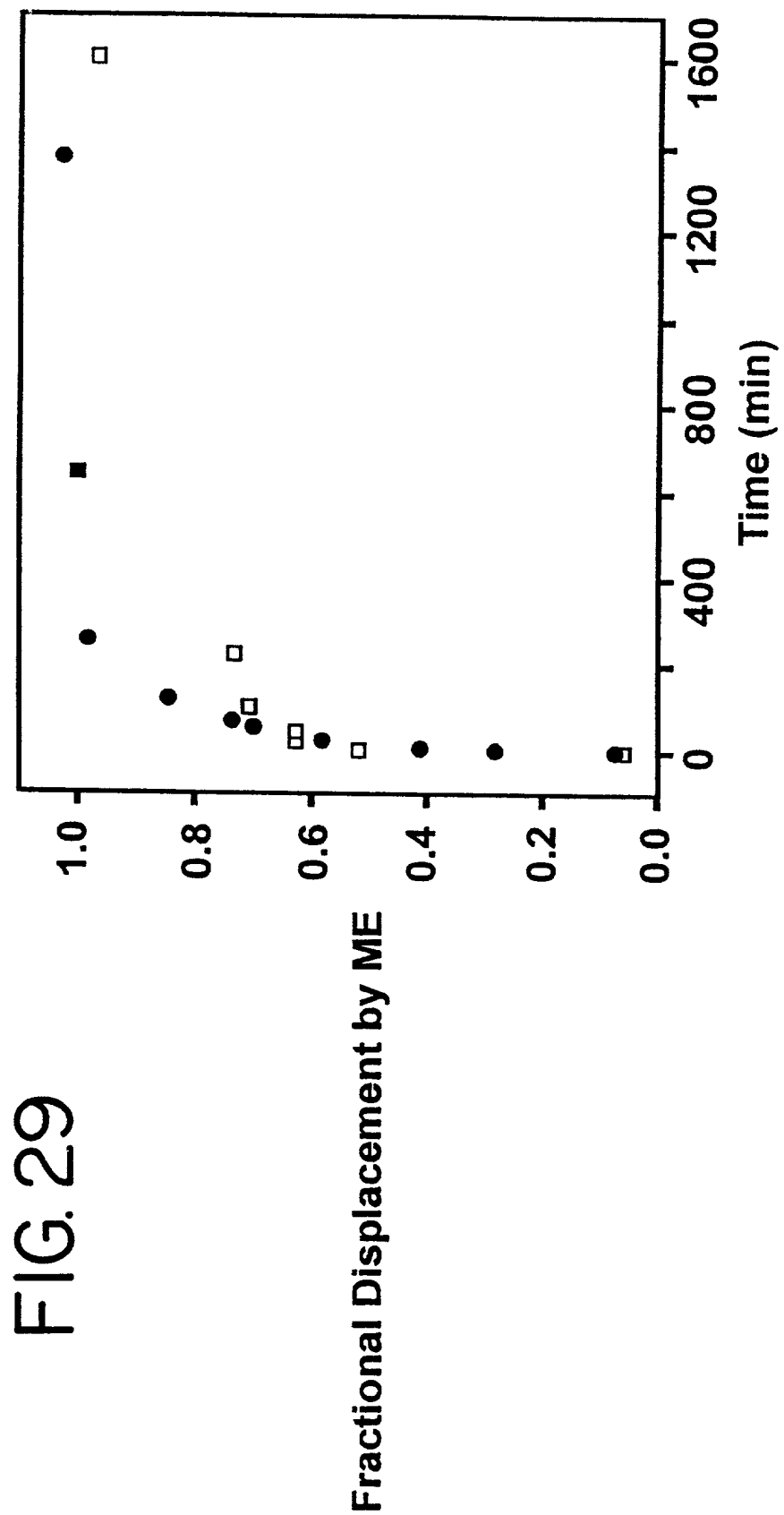


FIG. 30

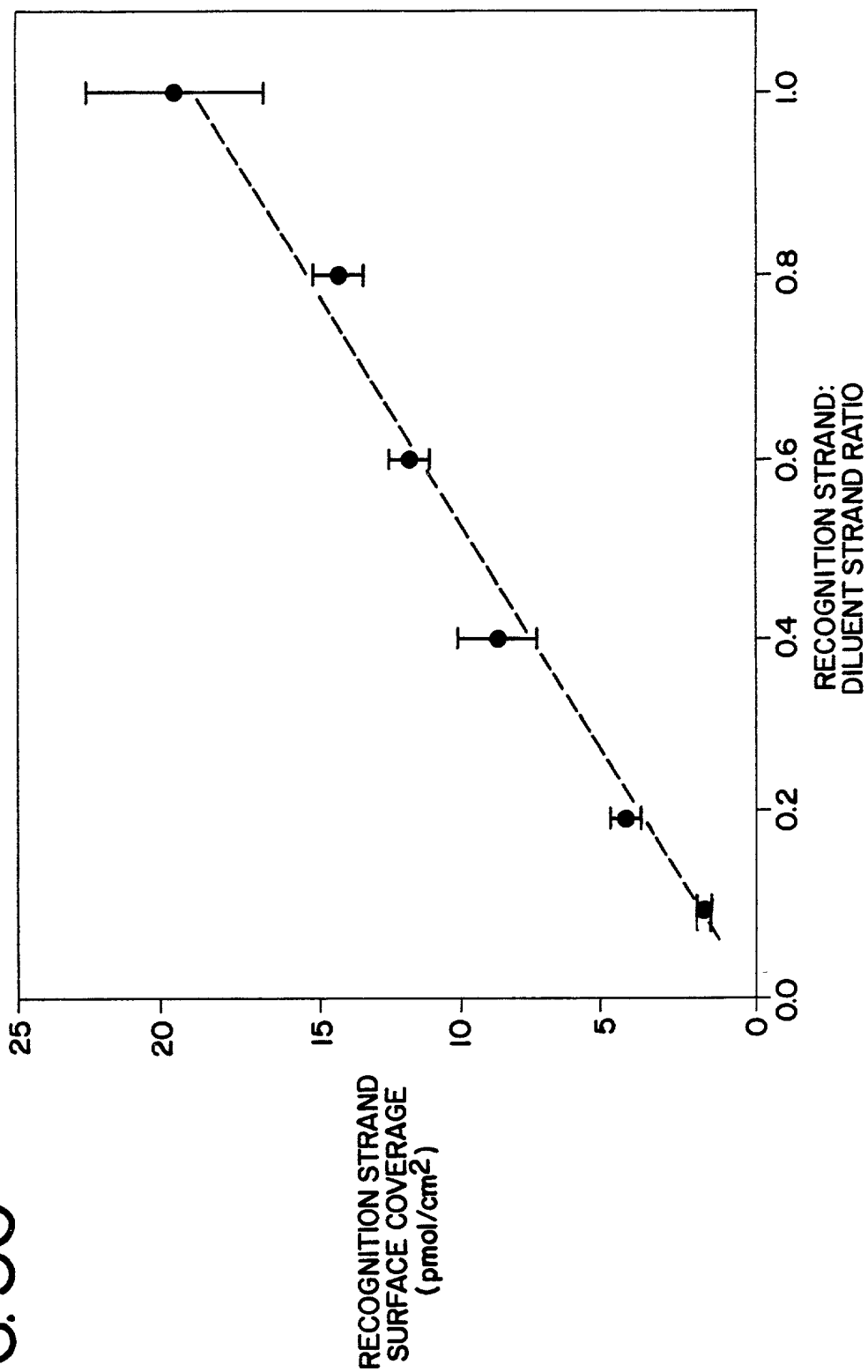


FIG. 3I

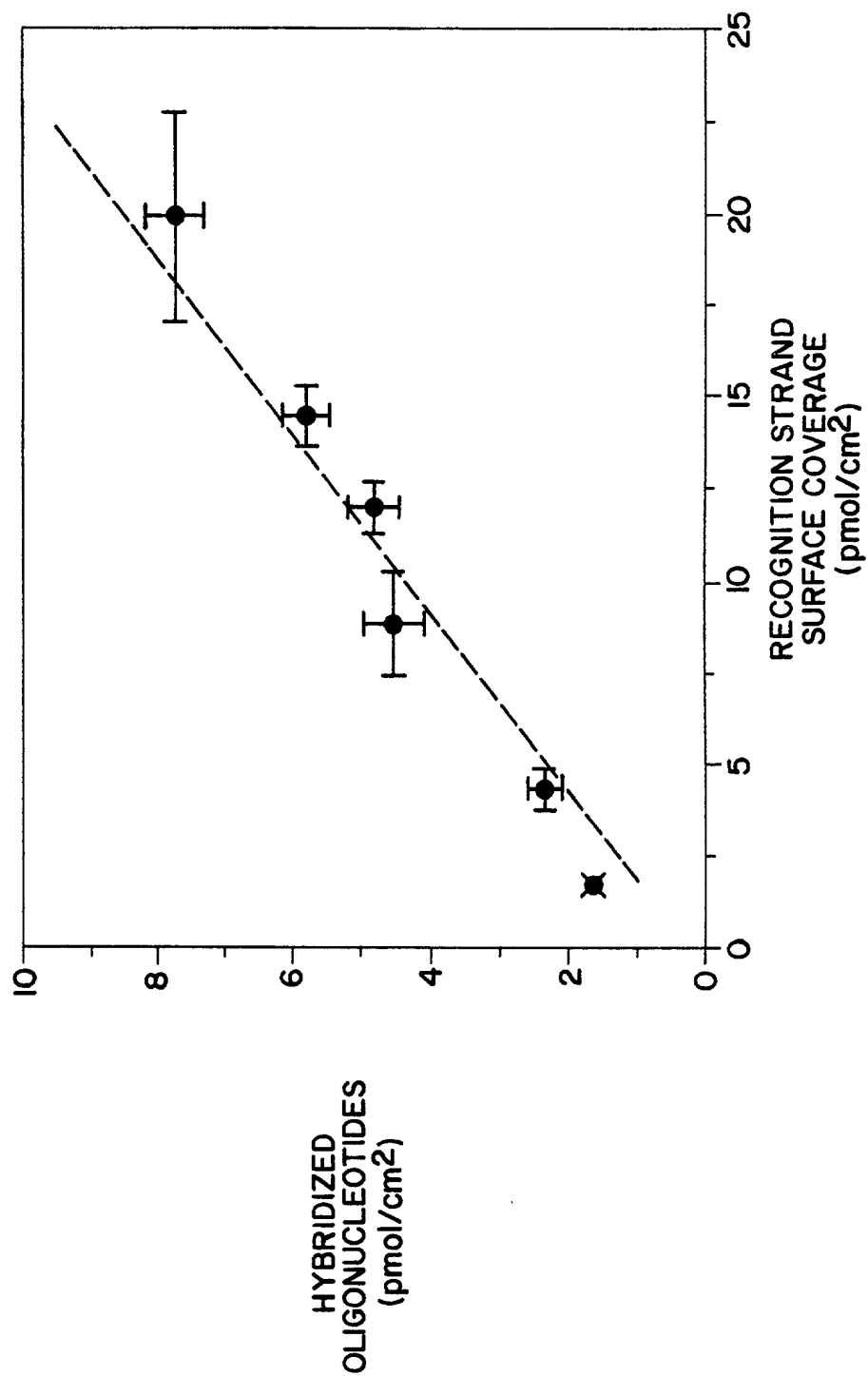
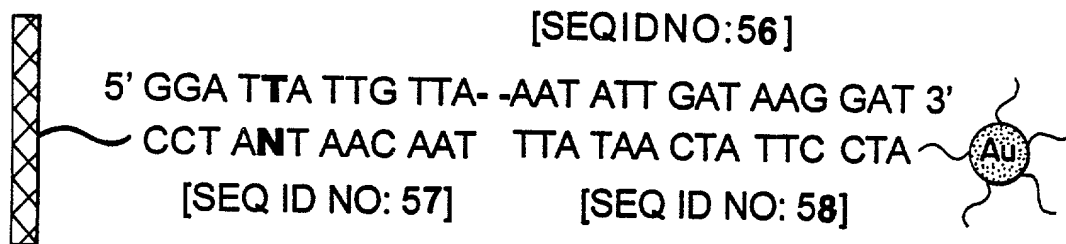


FIG. 32



N = A (complementary),
G,C,T (mismatched)

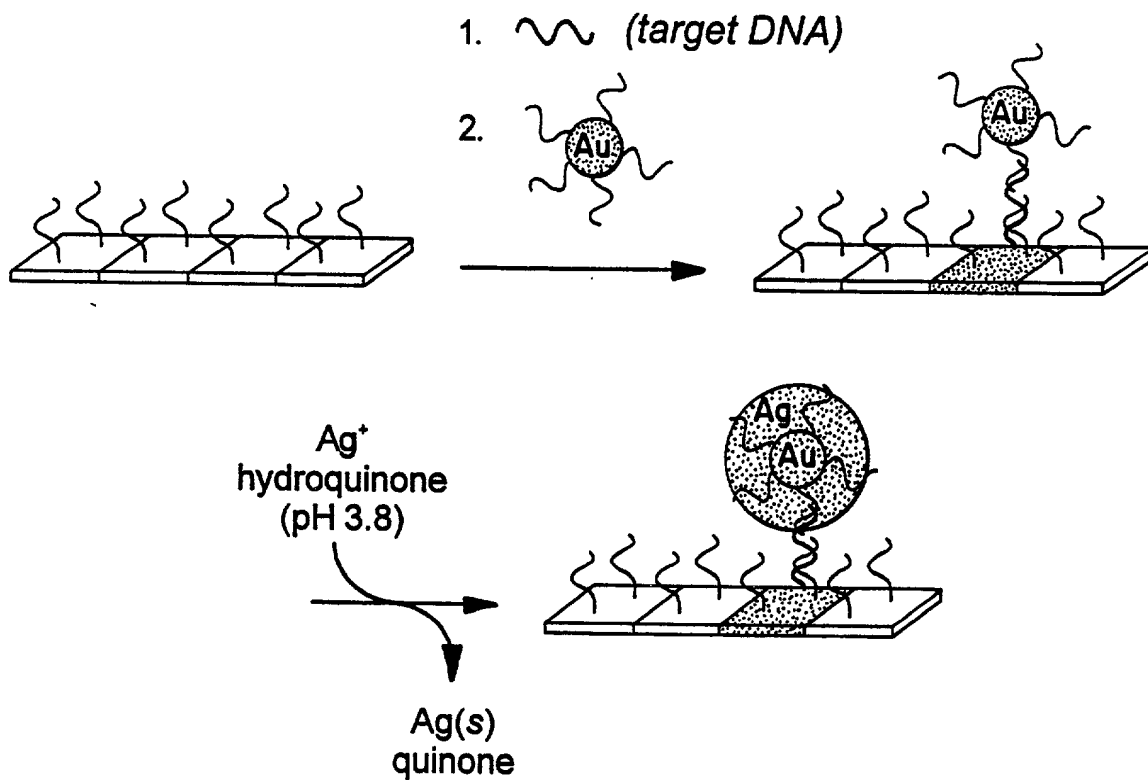


FIG. 34

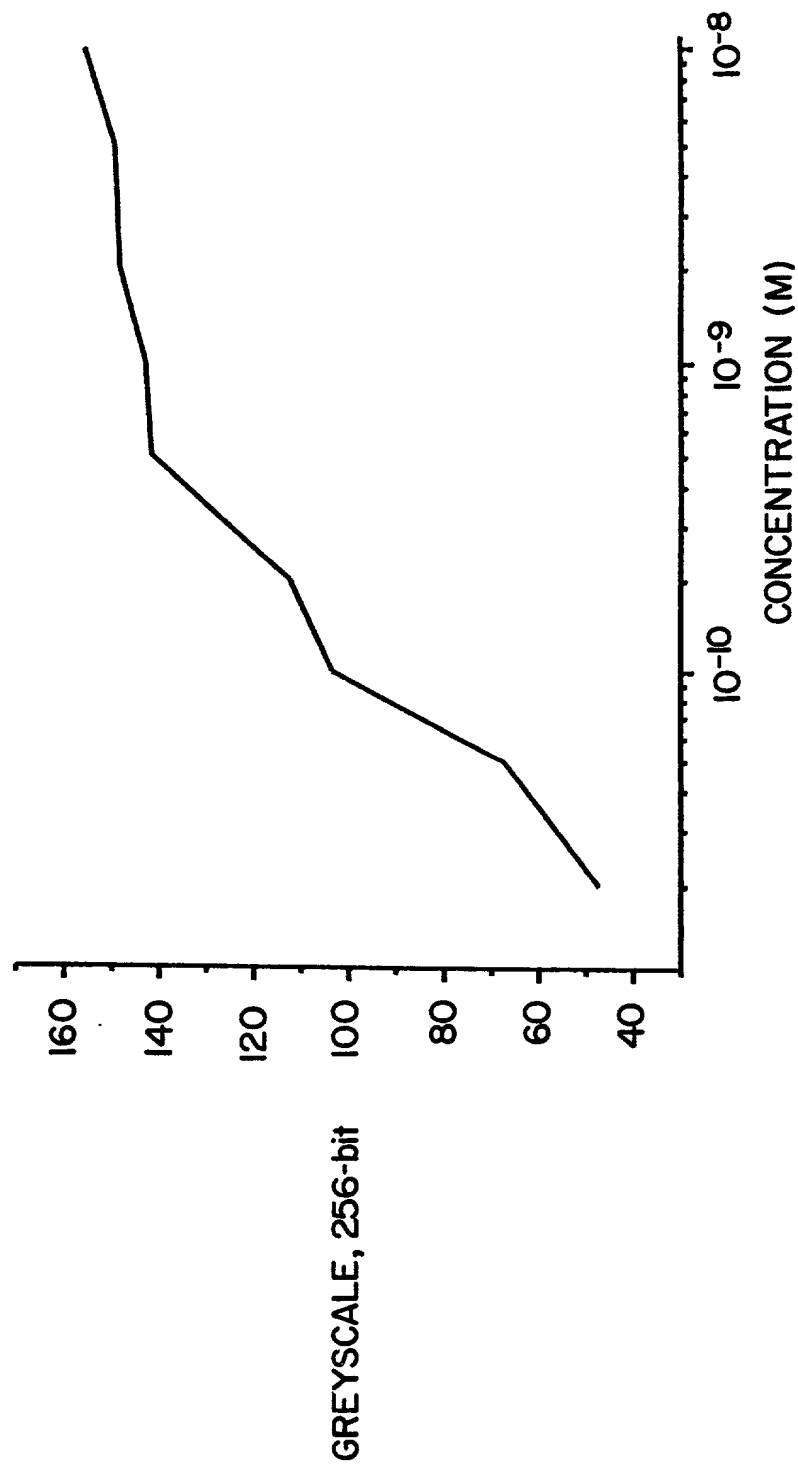


FIG.35A

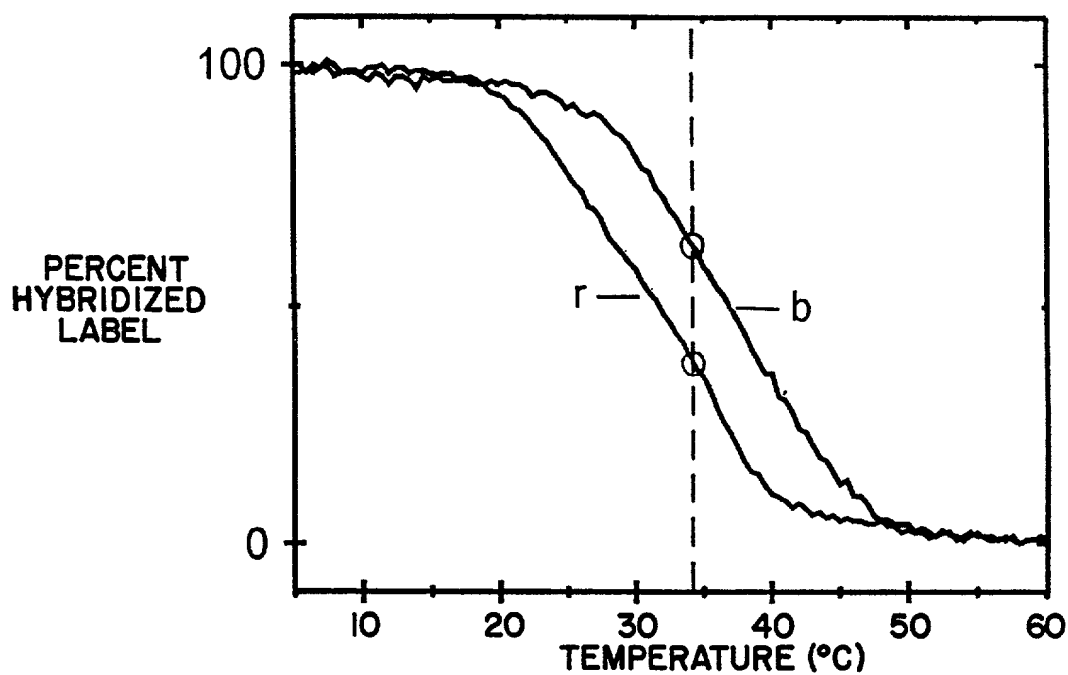


FIG.35B

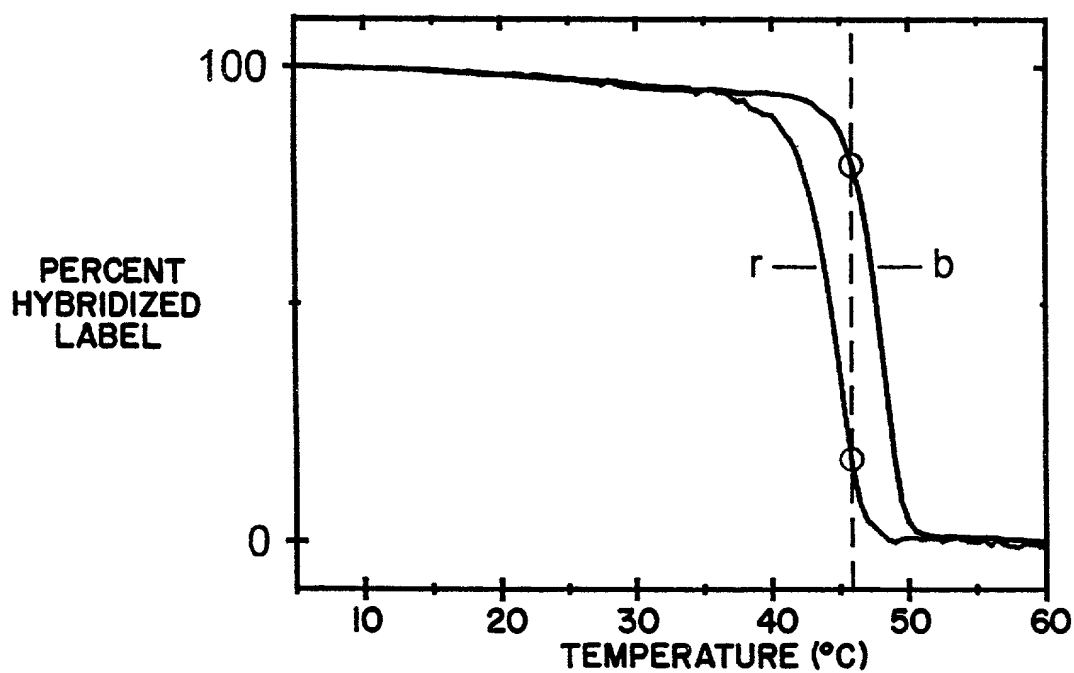


FIG. 36A

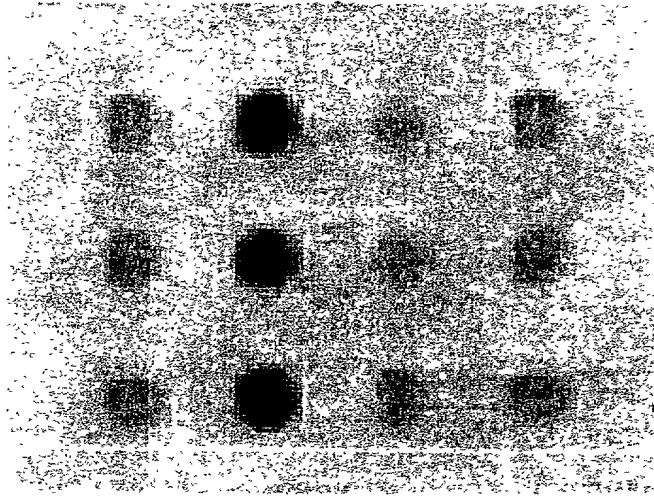
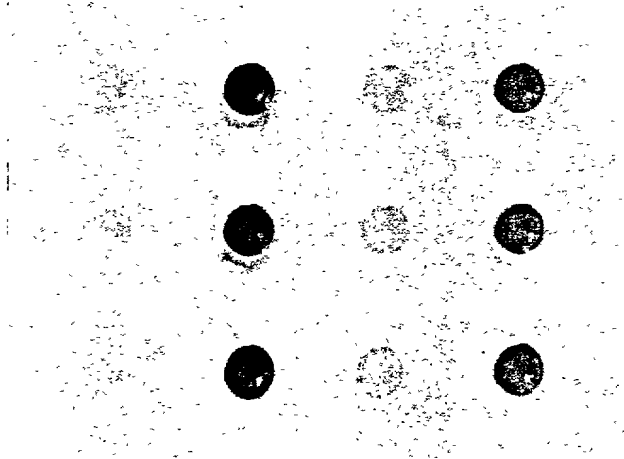


FIG. 36B



C A T G

FIG.37A

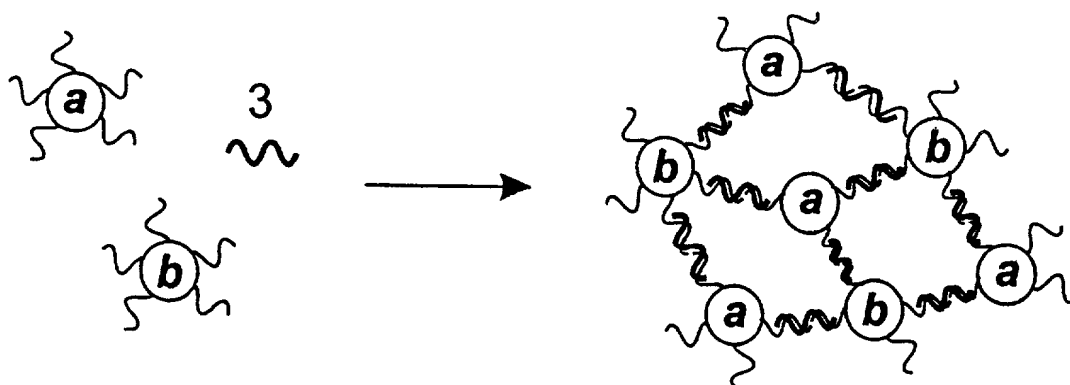


FIG.37B

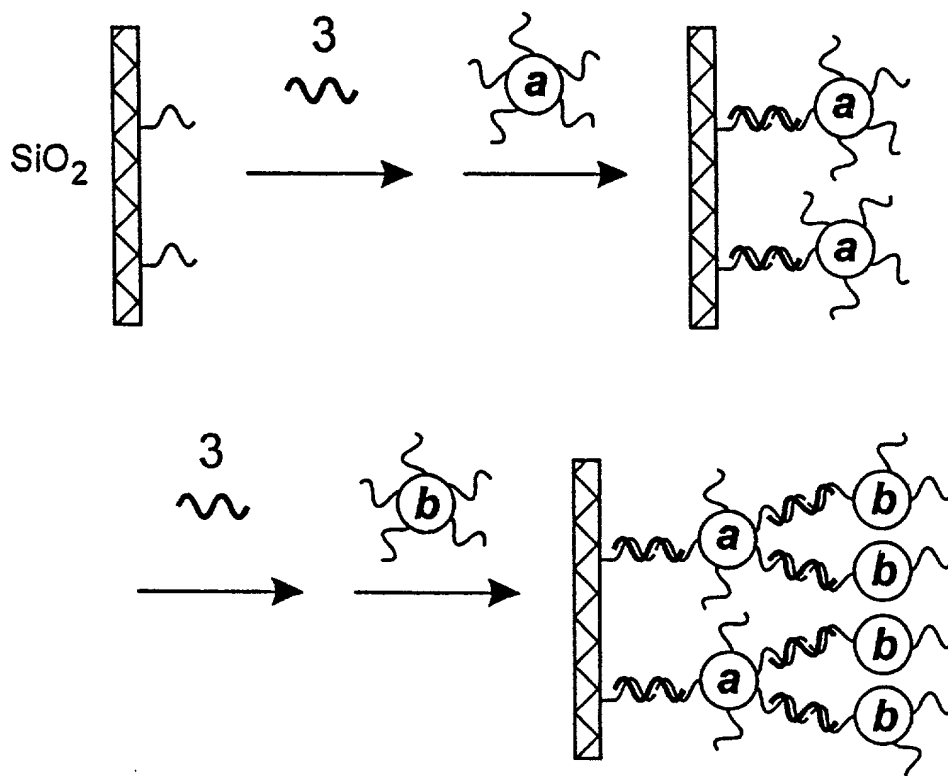


FIG. 38A

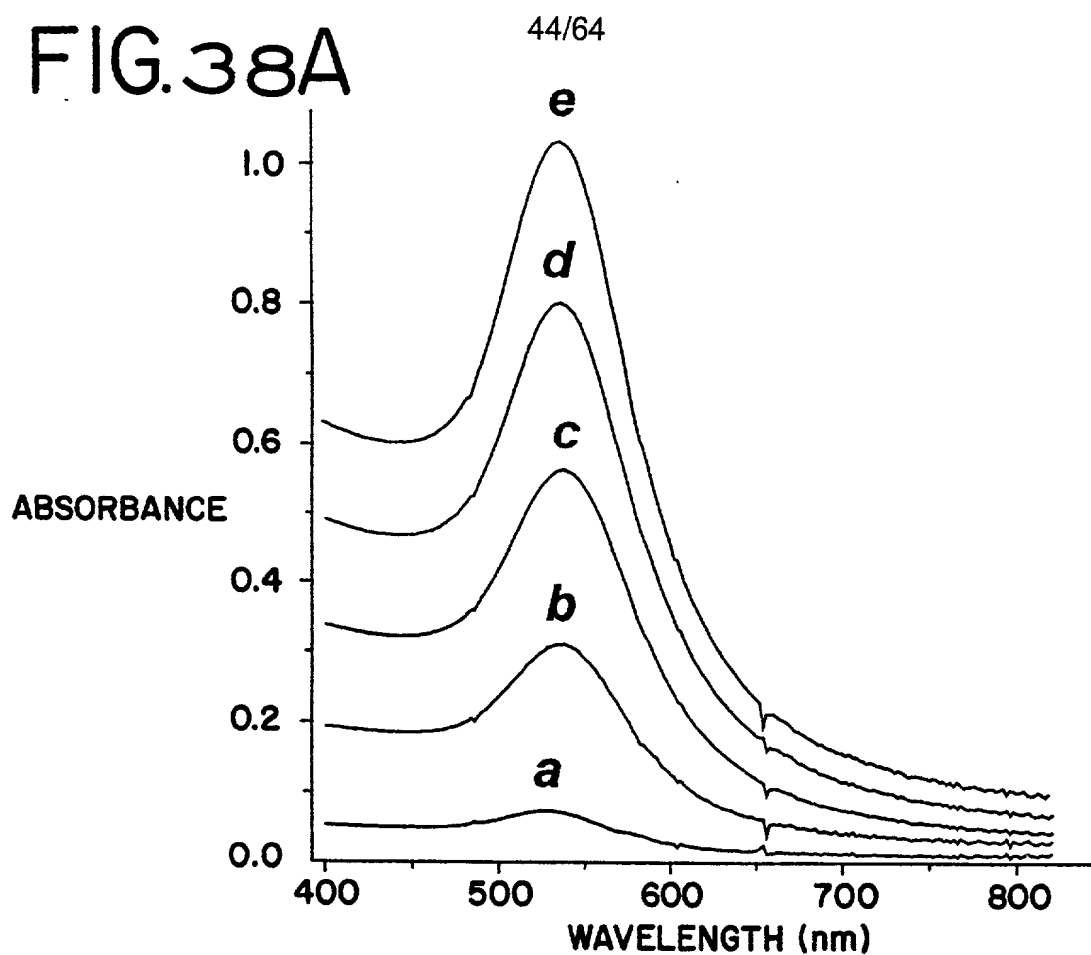
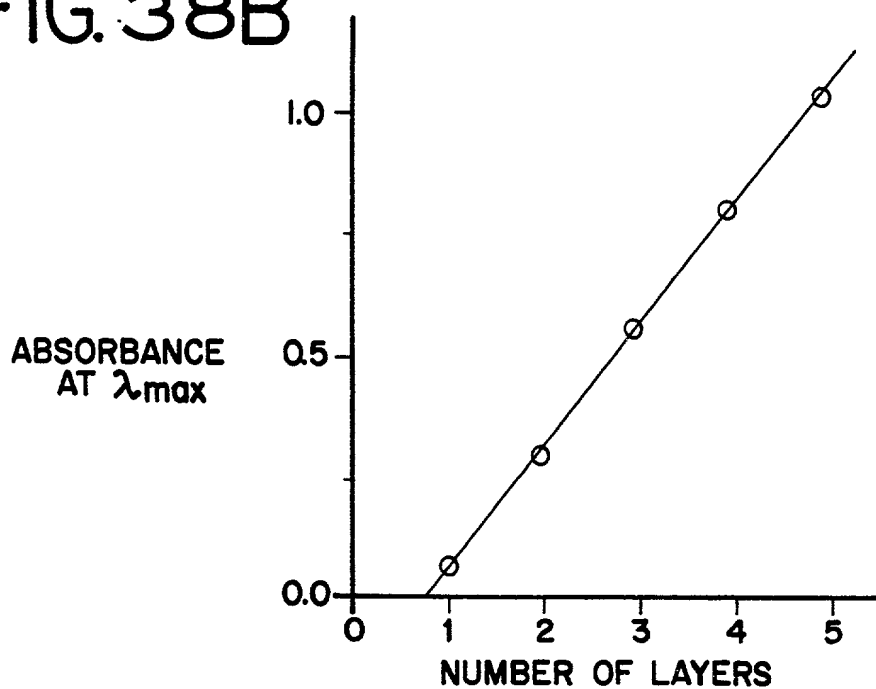

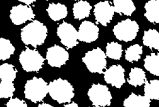


FIG. 38B





A — 50 nm



B — 50 nm

FIG.39C

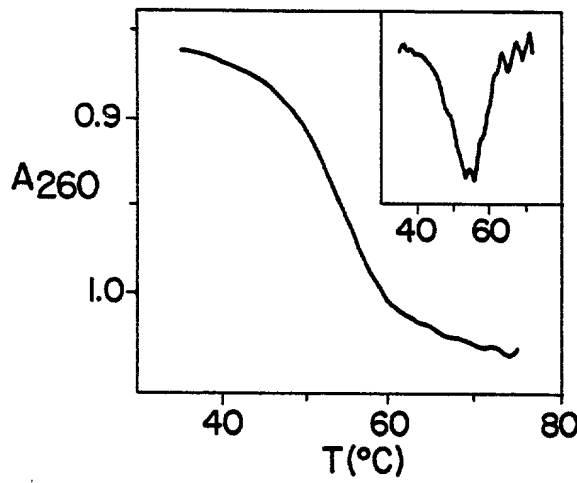


FIG.39D

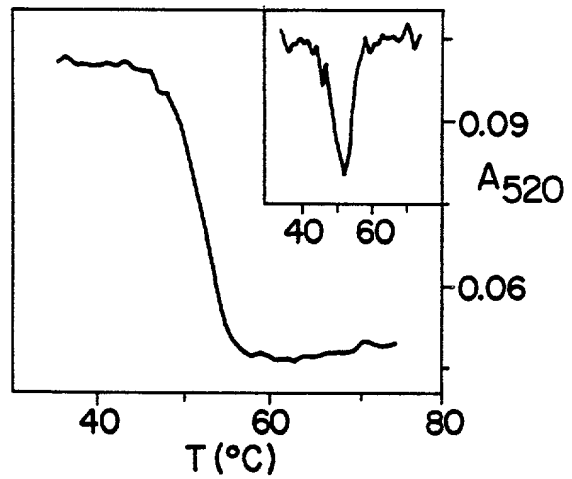


FIG.39E

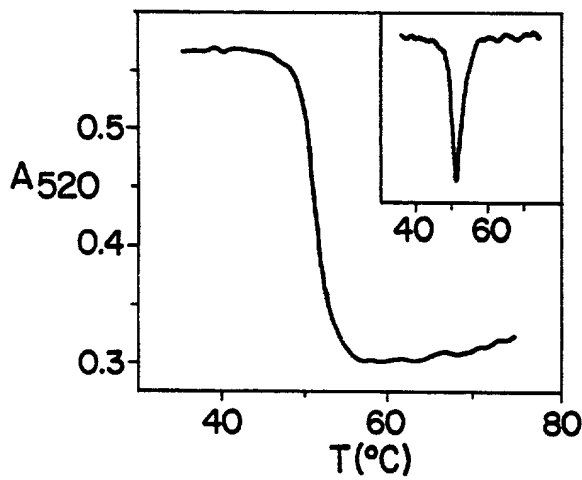


FIG.39F

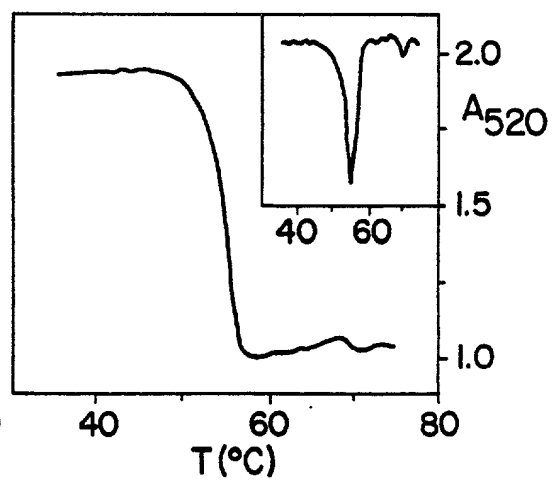


FIG. 40

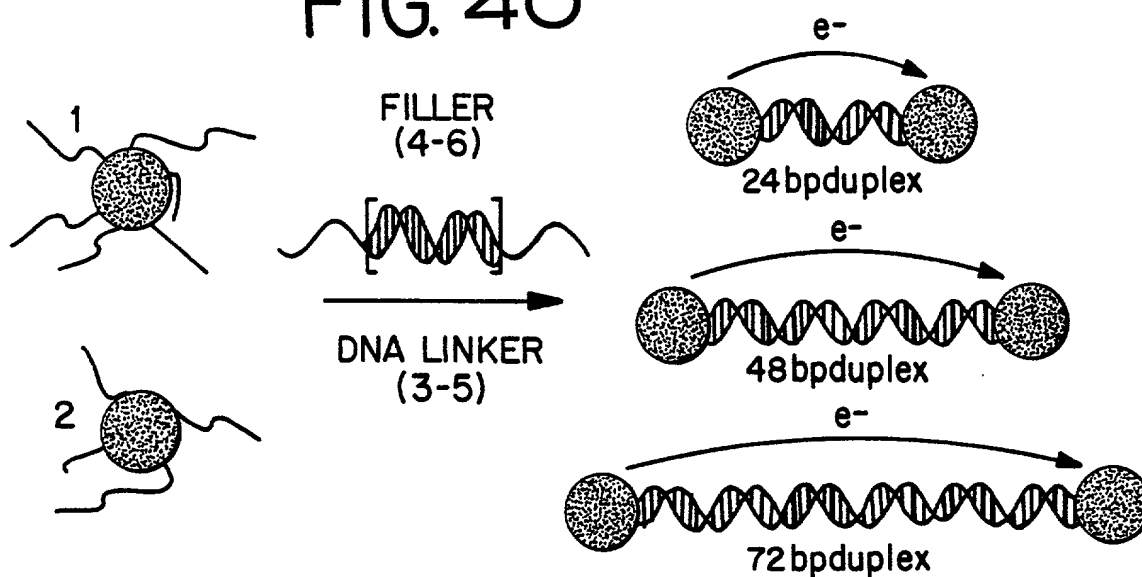


FIG. 41

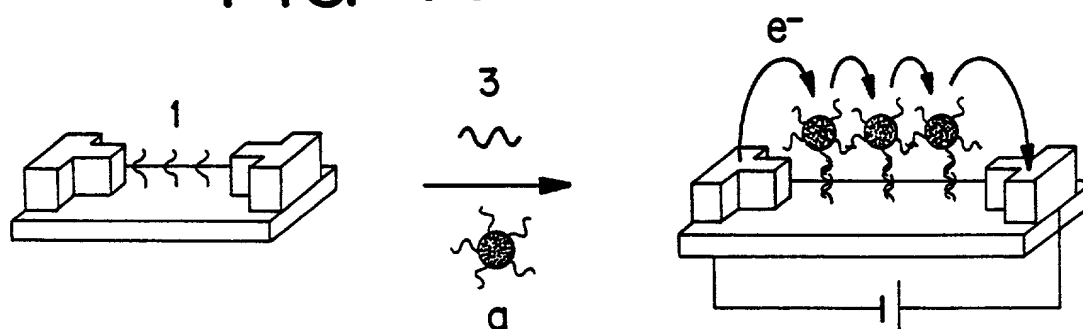
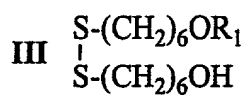
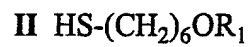
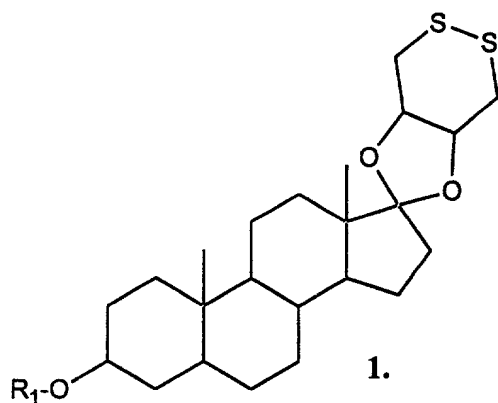


FIG. 42



R₁

a = H

b = (iPr)₂NP(OCH₂CH₂CN)-

c1 = 5'p(A₂₀)-TATCGTTCCATCAGCT [SEQ ID NO: 65]

c2 = 5'-p(A₂₀)-TTGATCTTCCGTTCT [SEQ ID NO: 66]

Target I = 79-mer oligonucleotide with target region:

3'-.....ATAGCAAGGTAGTCGAGCAACTAGAAAGGCAAGA.....5'
[SEQ ID NO: 67]

FIG. 43

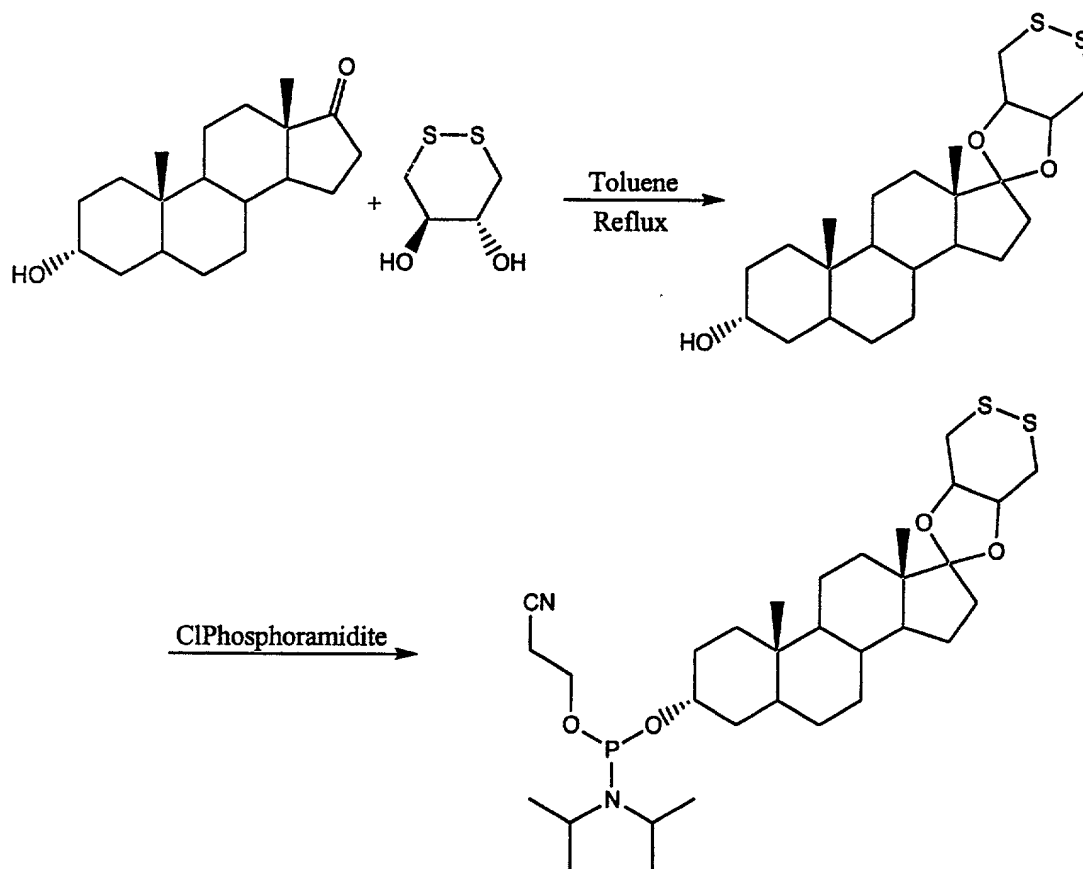
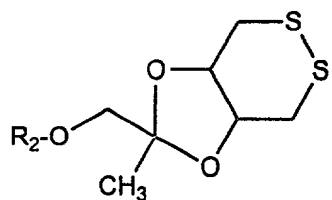


FIG. 44



2.

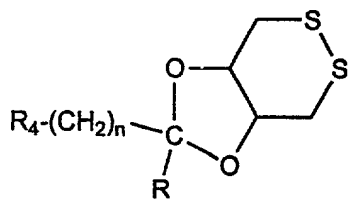
 R_2

a = H

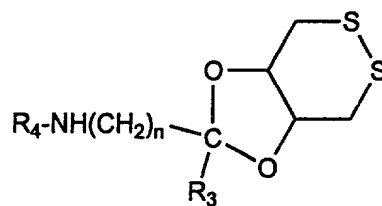
b = (iPr)₂NP(OCH₂CH₂CN)-c1 = 5'-p(A₂₀)-GCAGACCTCA [SEQ ID NO: 68]c2 = 5'-p(A₂₀)-CCTATGTGTCG [SEQ ID NO: 69]D = 5'-p(A₂₀) [SEQ ID NO: 70]

Target I = 63-mer oligonucleotide with target region:

3'-.....CGTCTGGAGTGGATACACAGC.....5'
[SEQ ID NO: 71]



3.



4.

R_3 = hydrogen, an alkyl group, an aryl group, or a substituted alkyl or aryl group

R_4 = an attached oligonucleotide or modified oligonucleotide

FIG. 45

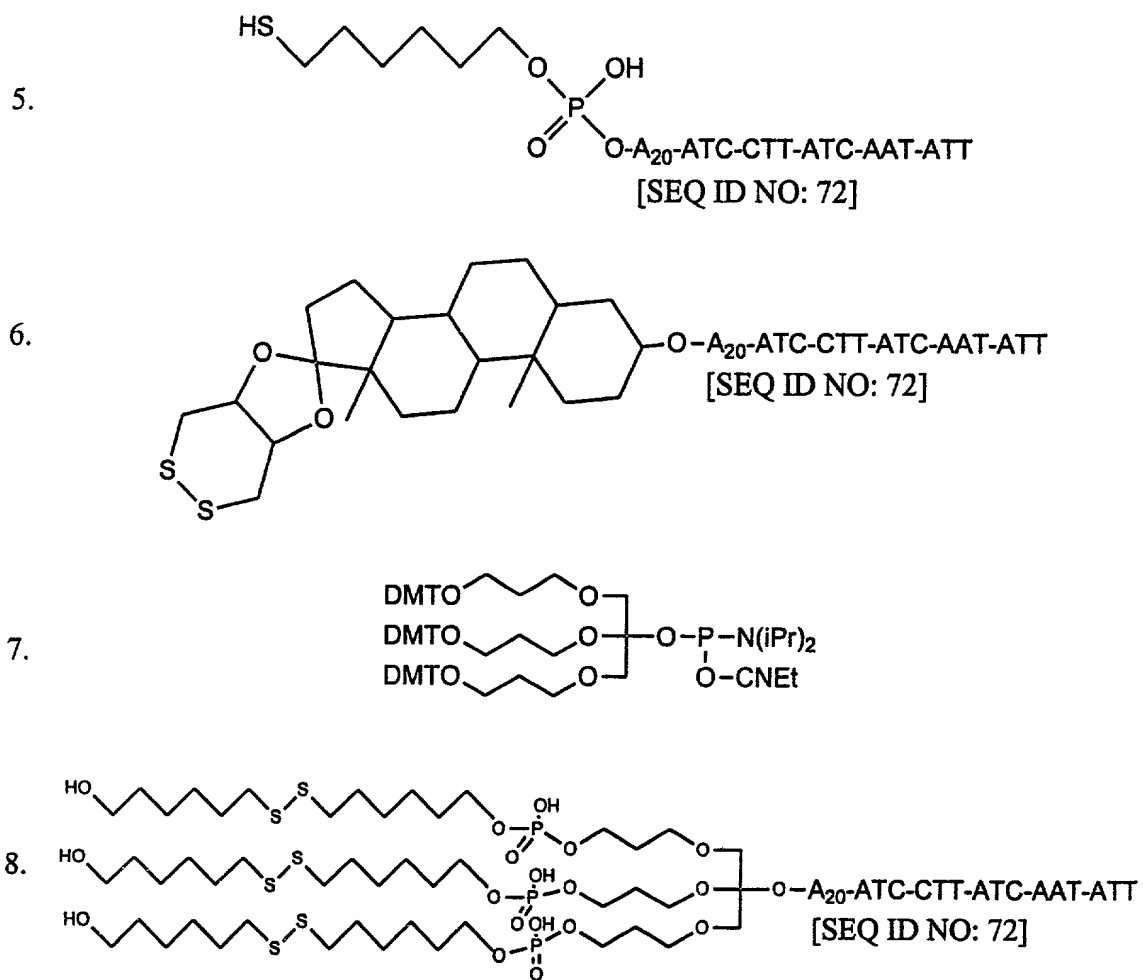
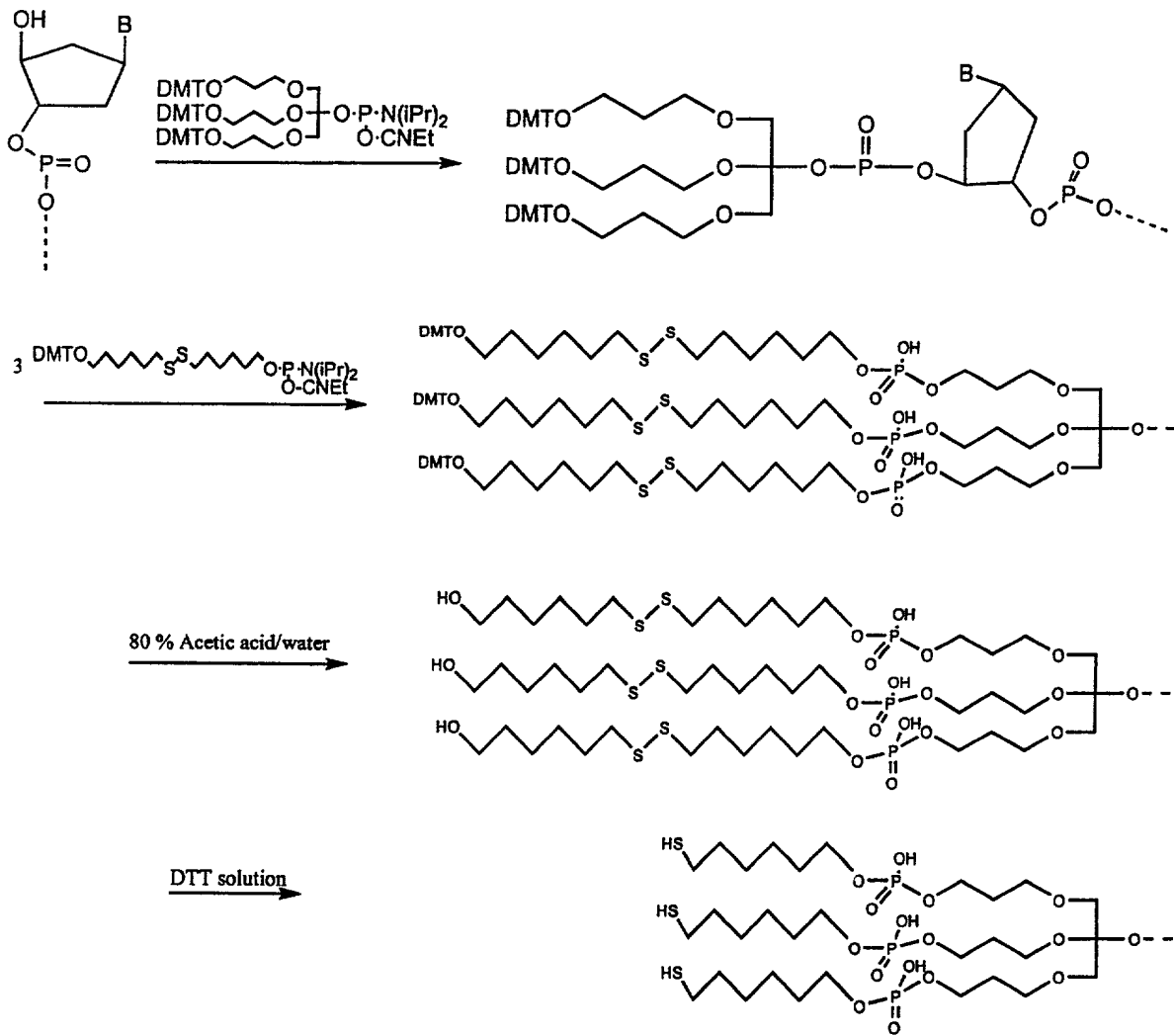


FIG. 46



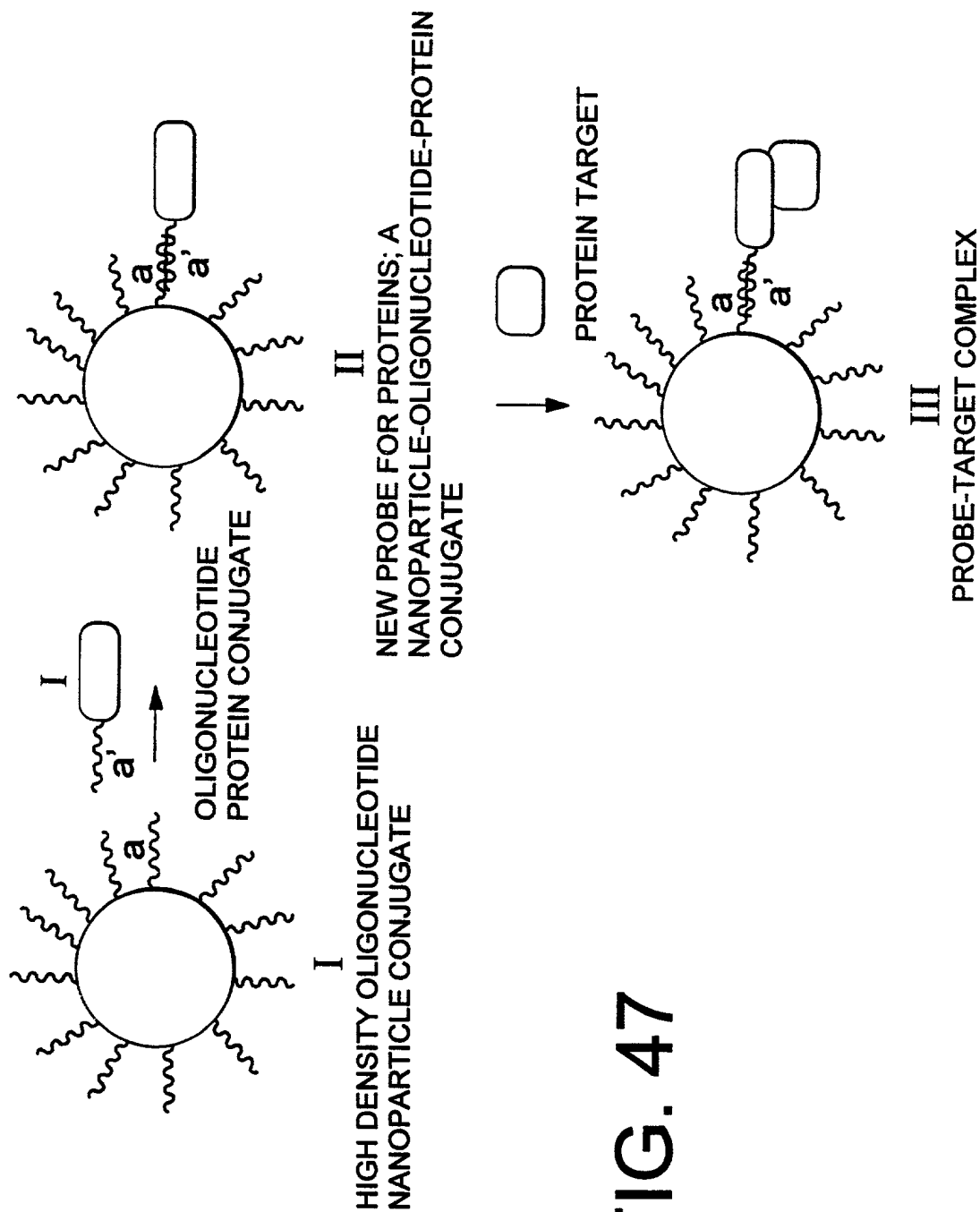
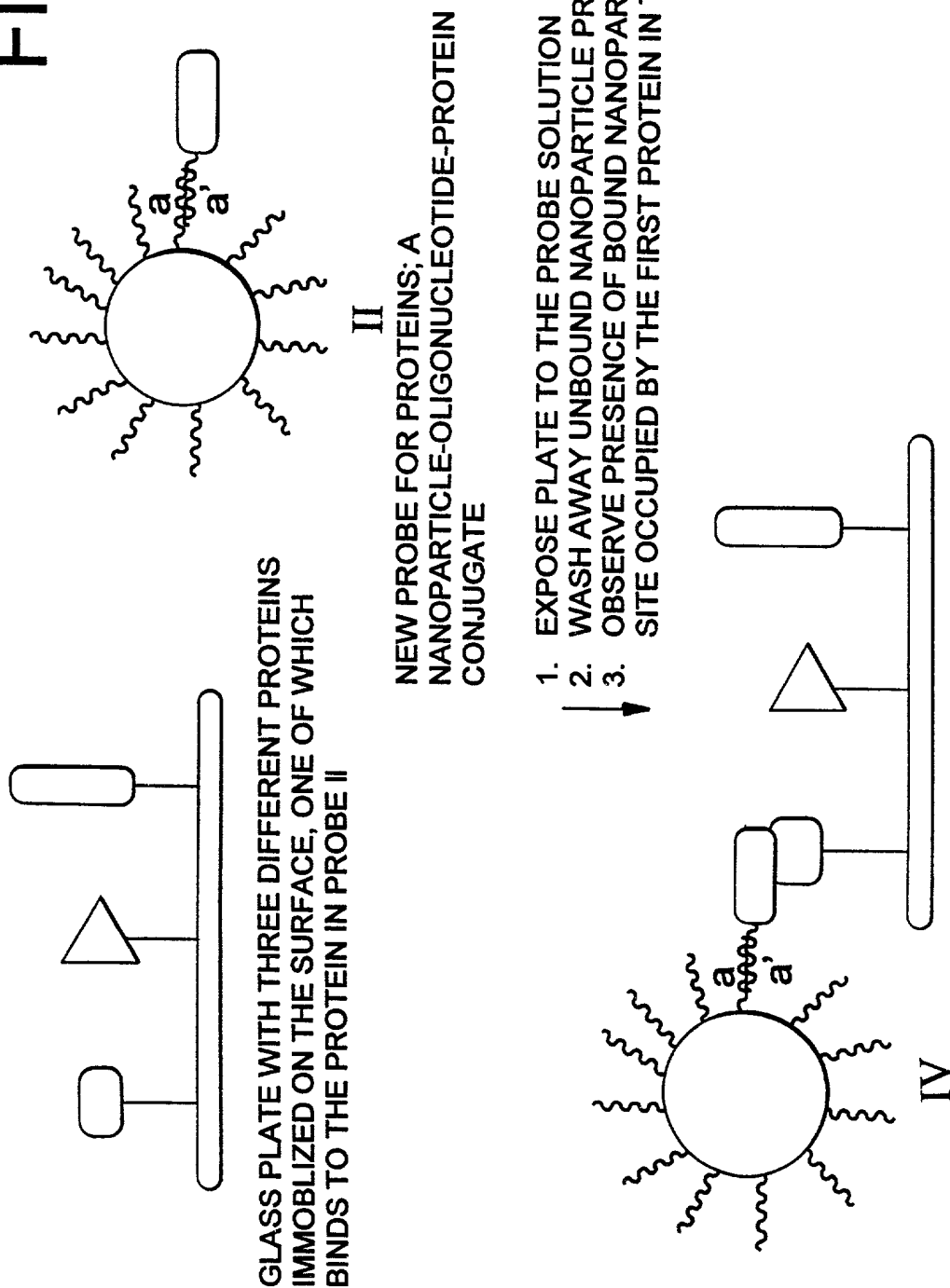


FIG. 47

FIG. 48



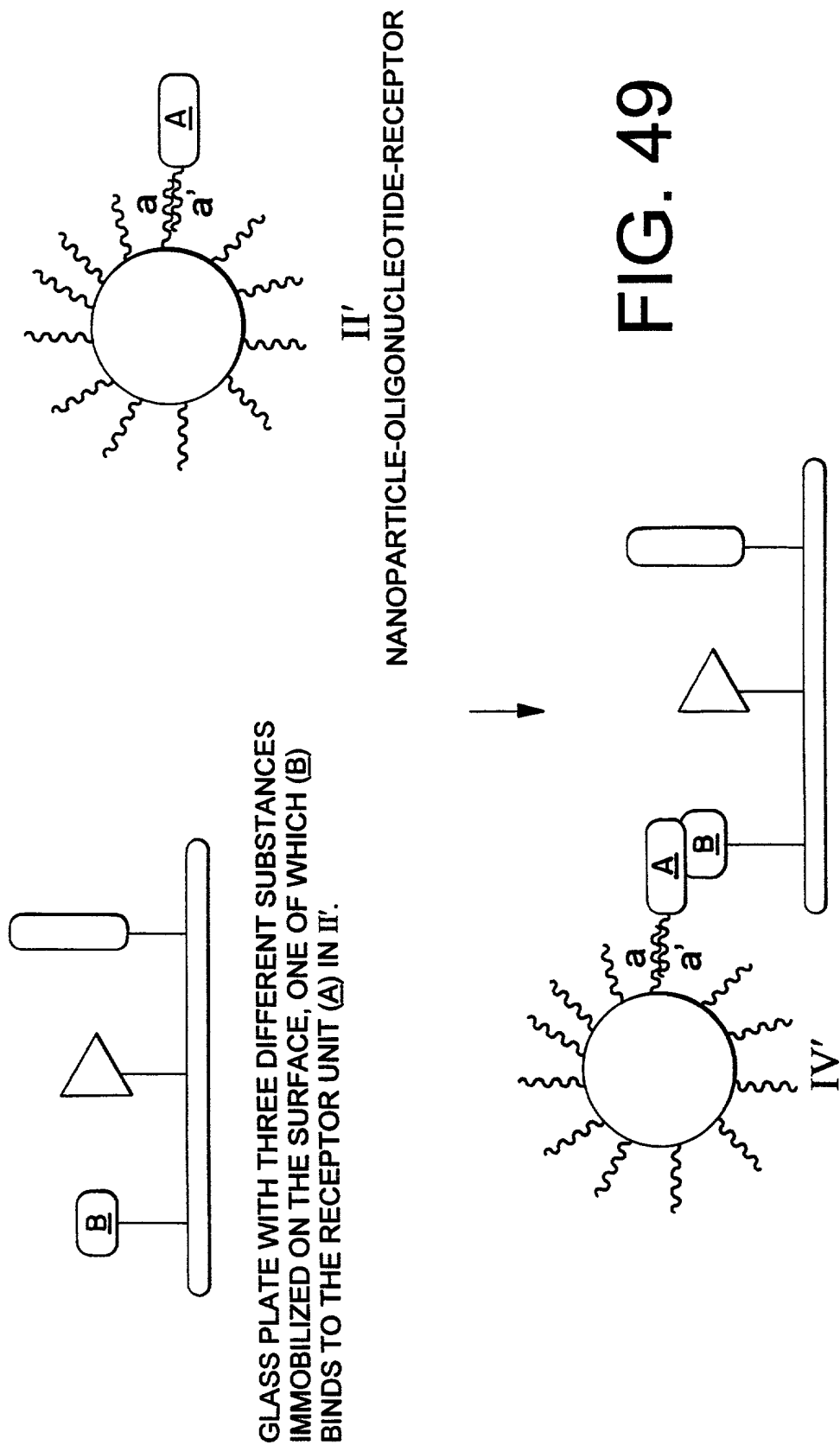


FIG. 49

FIG. 50A

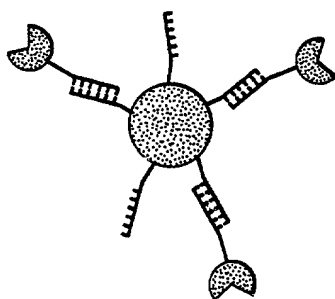


FIG. 50B

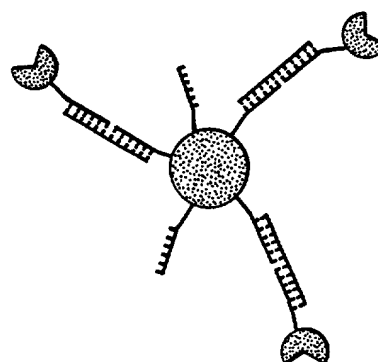


FIG. 51A

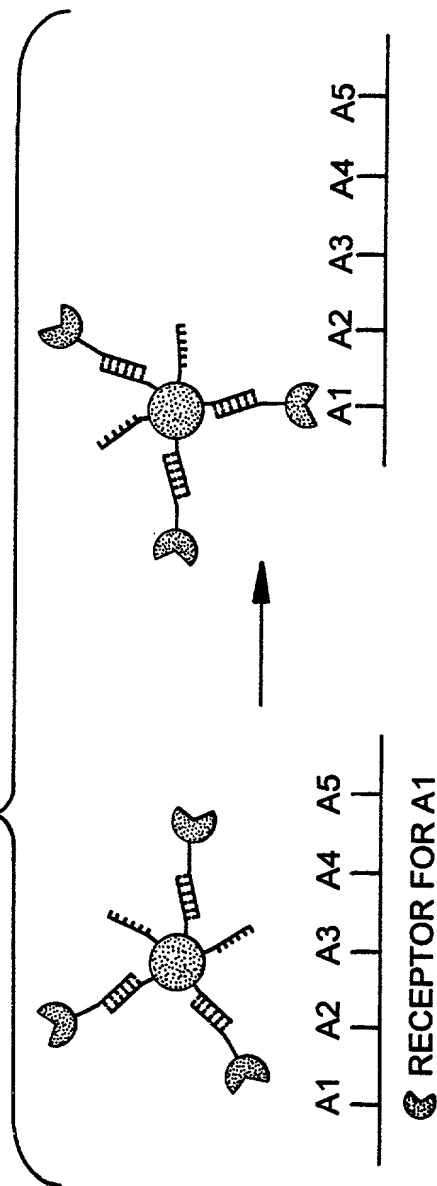


FIG. 51B

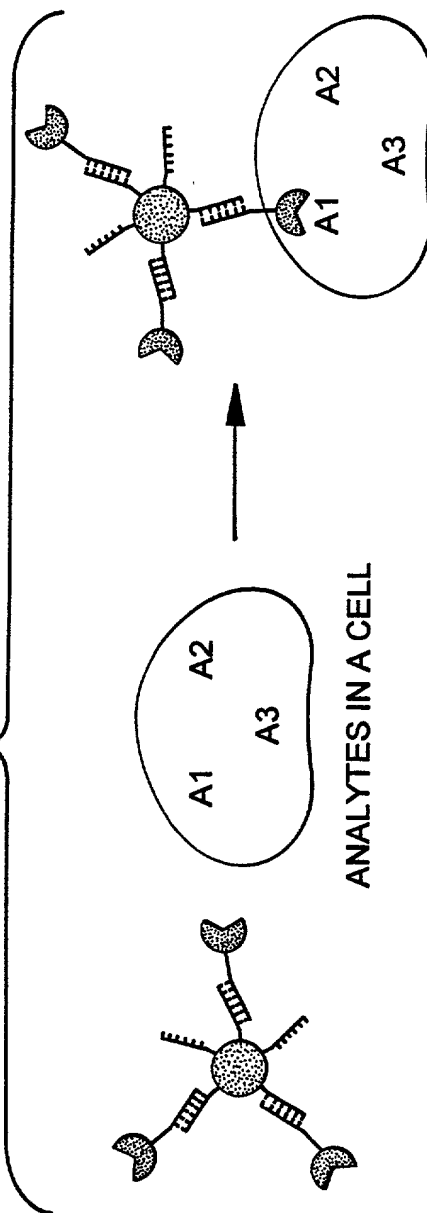
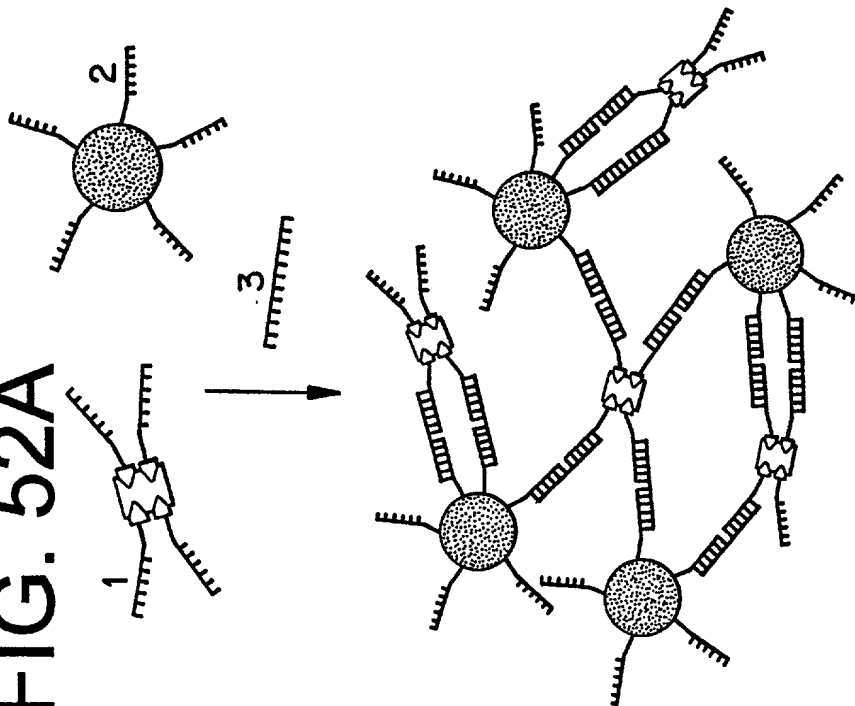


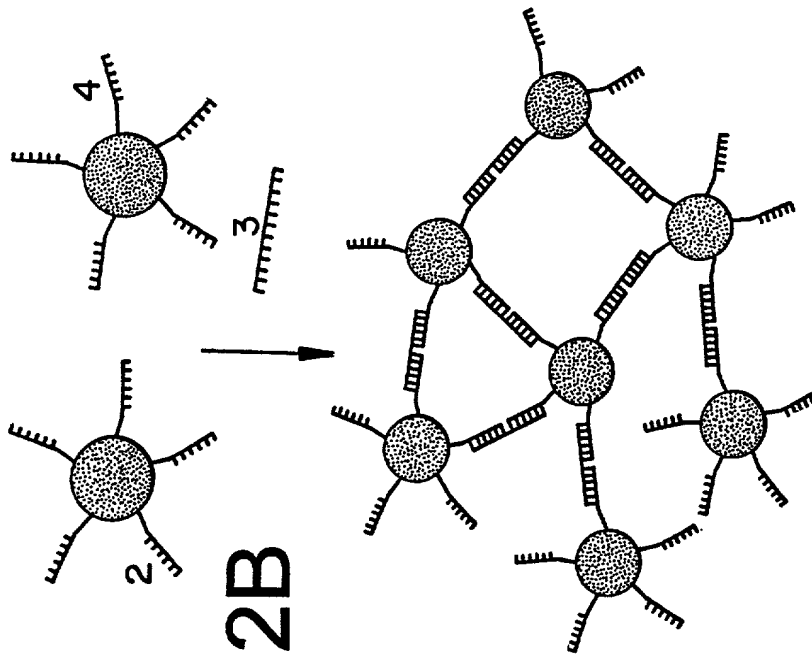
FIG. 52A



- 1 3' biotin-TEG-A₁₀-ATG CTC AAC TCT 5' [SEQ. ID NO. 73]
 2 5' SH(CH₂)₆-A₁₀-CGC ATT CAG GAT 3' [SEQ. ID NO. 74]
 3 5' TAC GAG TTG AGA ATC CTG AAT GCG 3' [SEQ. ID NO. 75]

● 13 nm Au NANOPARTICLES [] STREPTAVIDIN

FIG. 52B



- 2 5' SH(CH₂)₆-A₁₀-CGC ATT CAG GAT 3'
 3 5' TAC GAG TTG AGA ATC CTG AAT GCG 3'
 4 3' SH(CH₂)₃-A₁₀-ATG CTC AAC TCT 5'

● 13 nm Au NANOPARTICLES

FIG. 52C

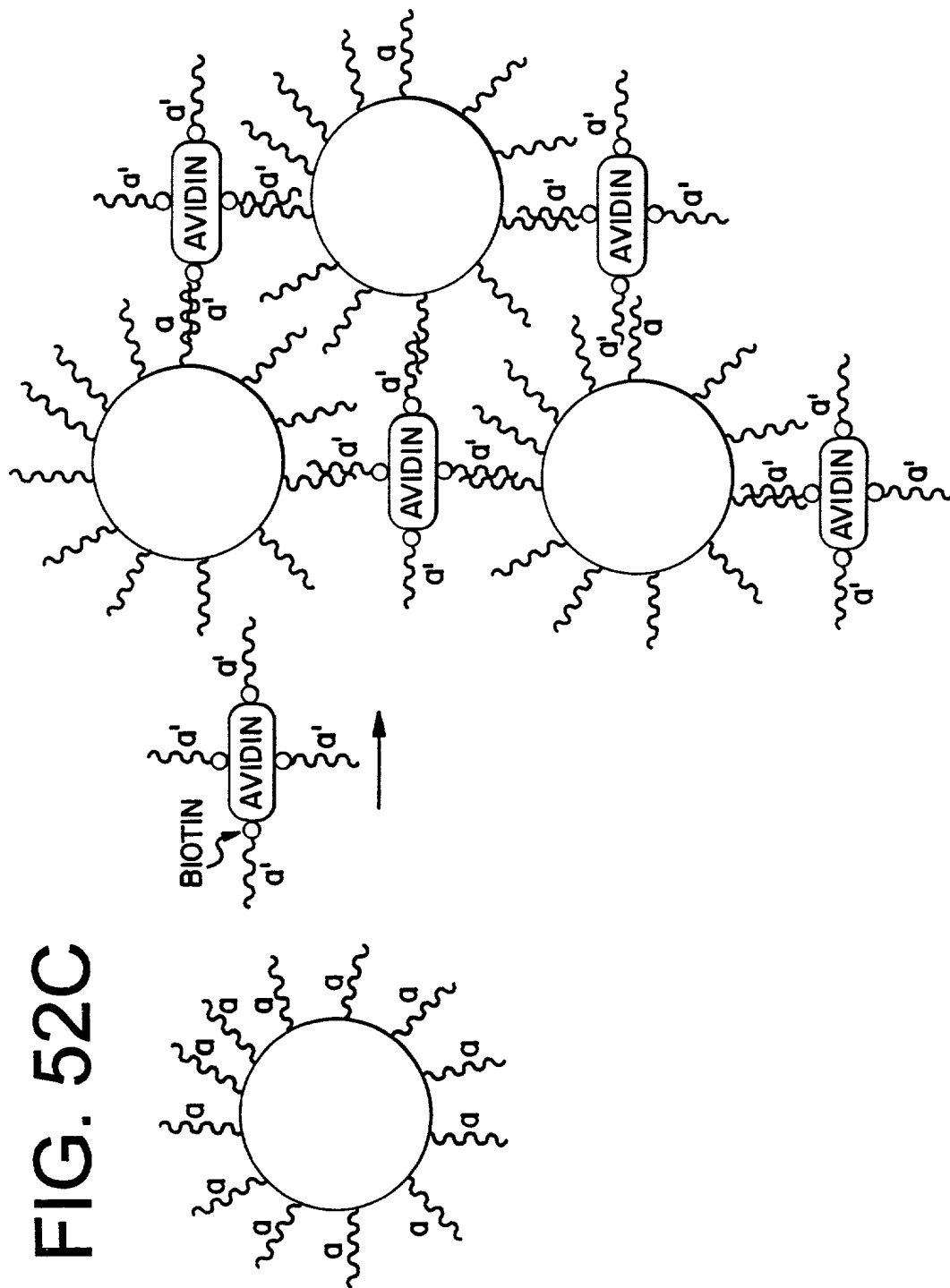


FIG. 53

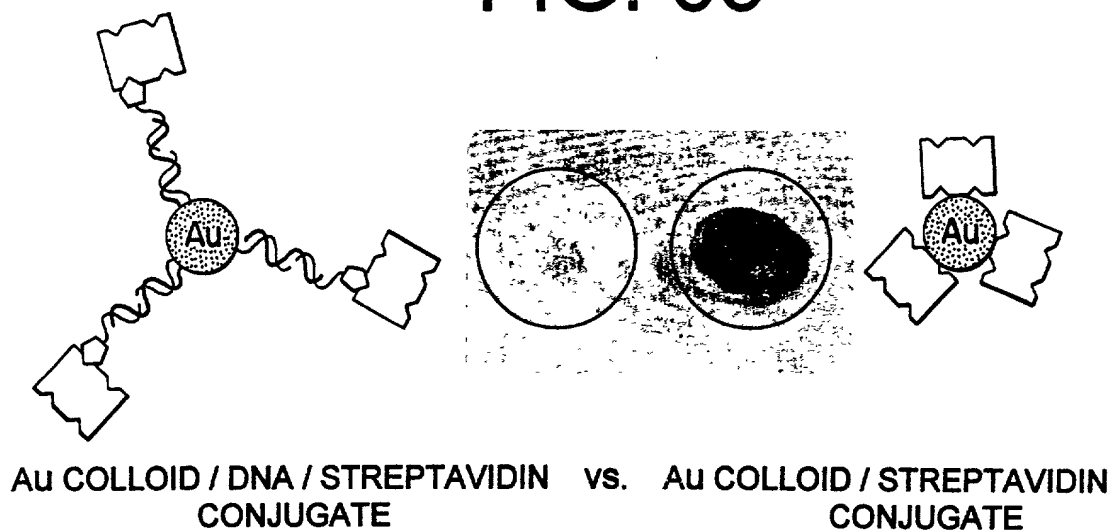


FIG. 54

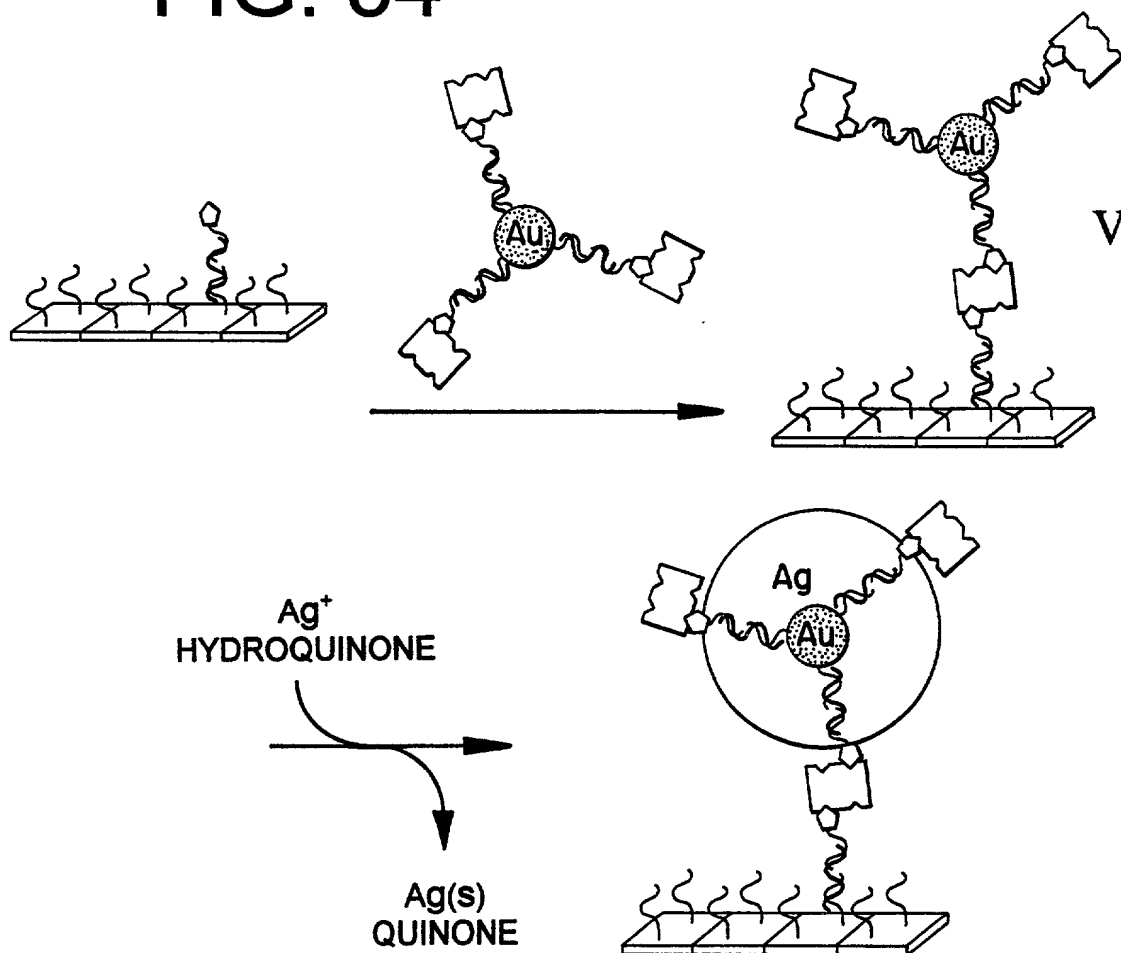


FIG. 55

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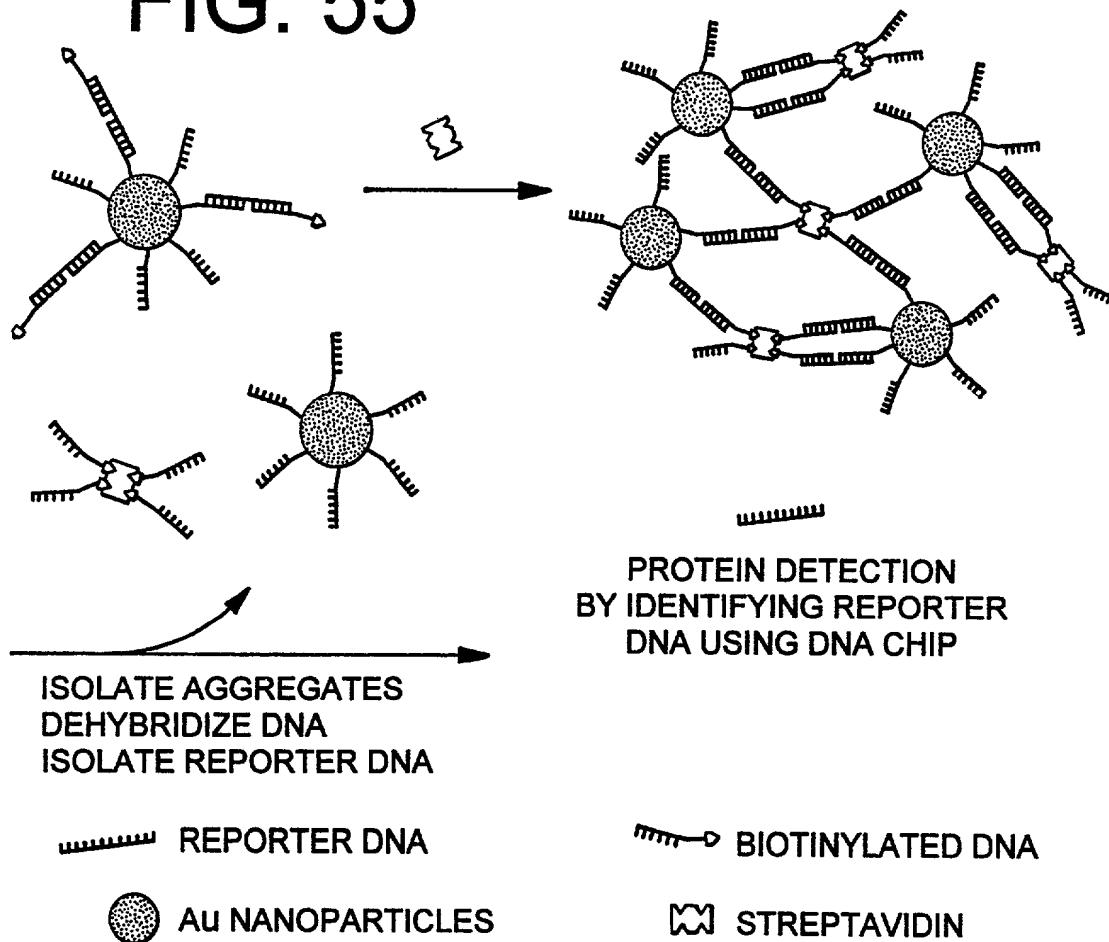


FIG. 56

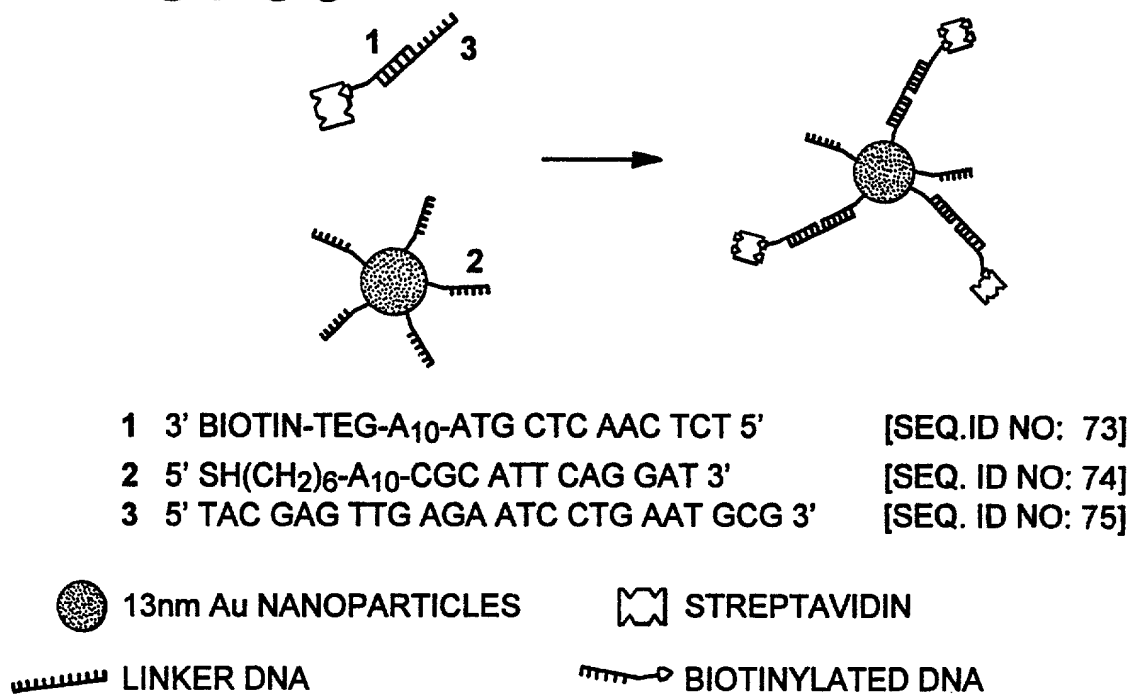


FIG. 57A

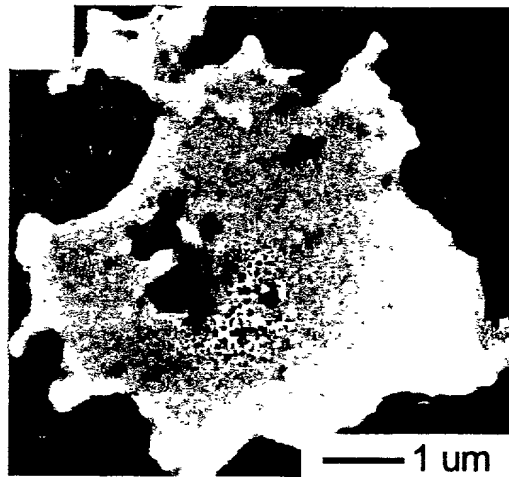


FIG. 57B

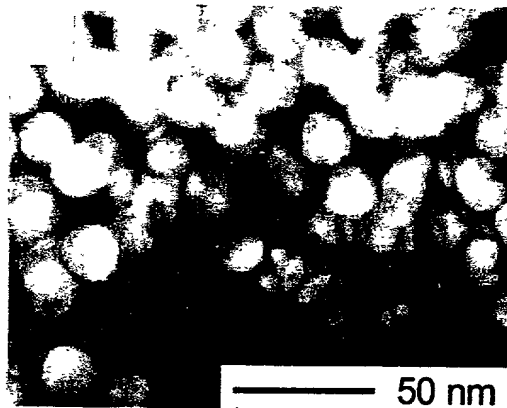


FIG. 58A

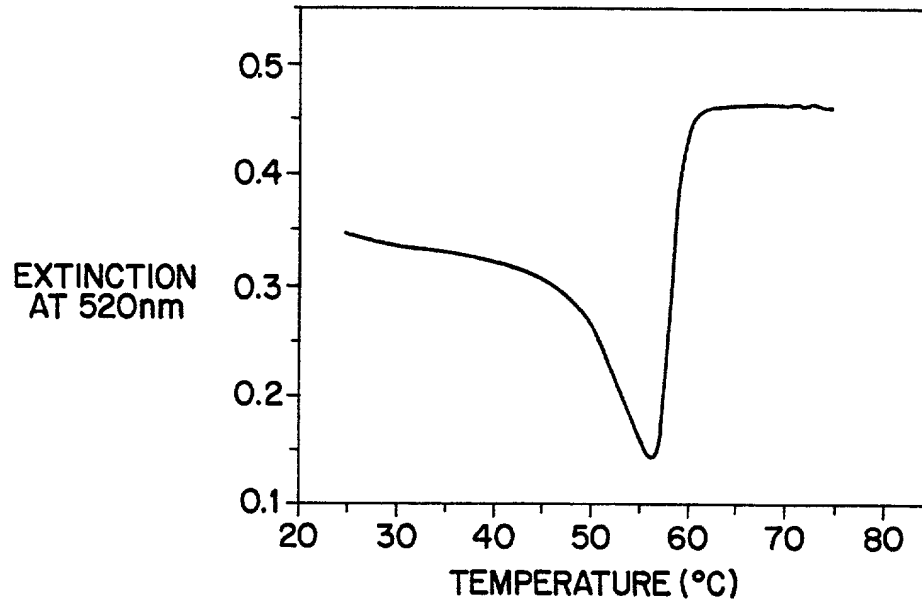


FIG. 58B

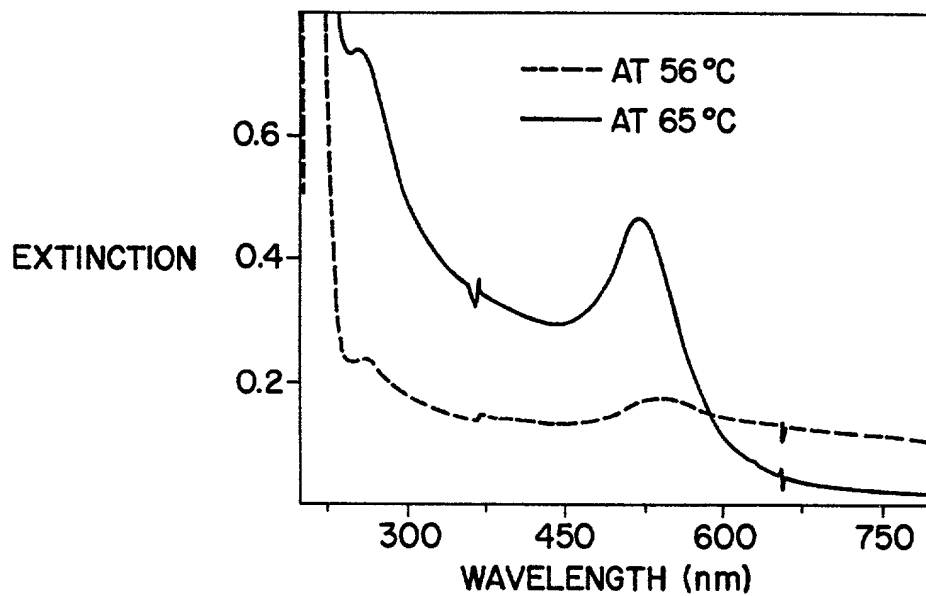


FIG. 59

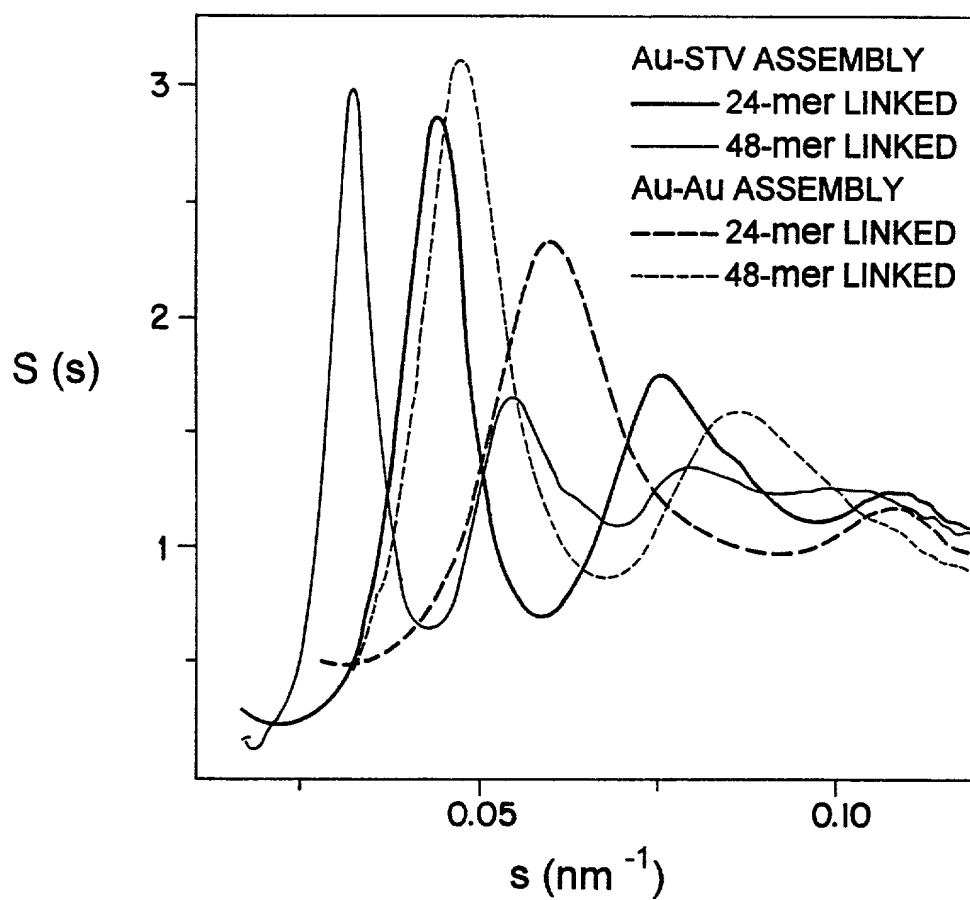
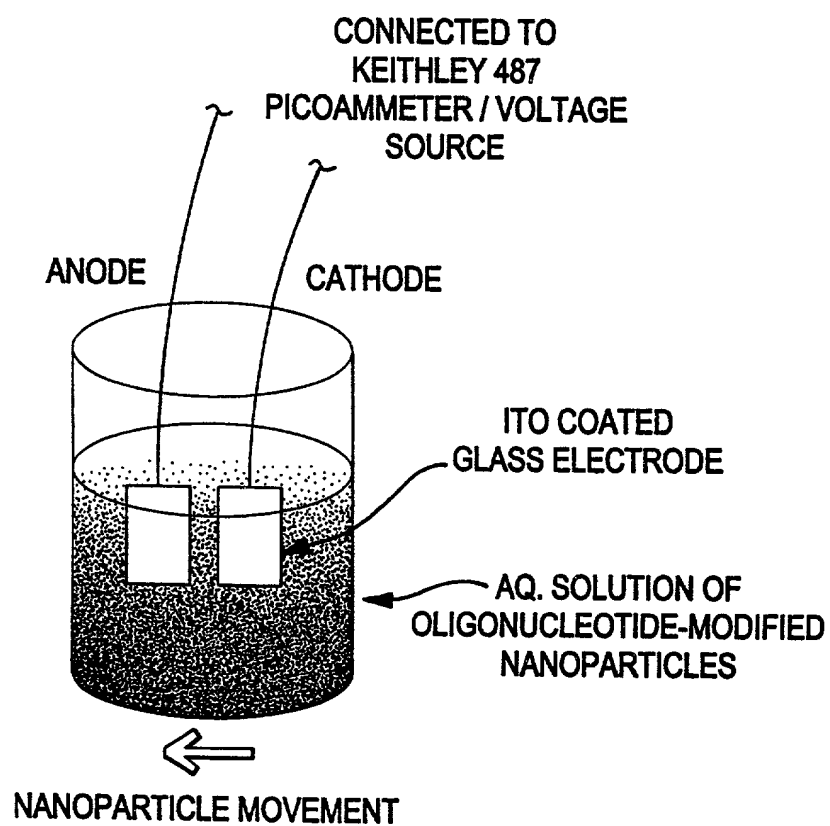


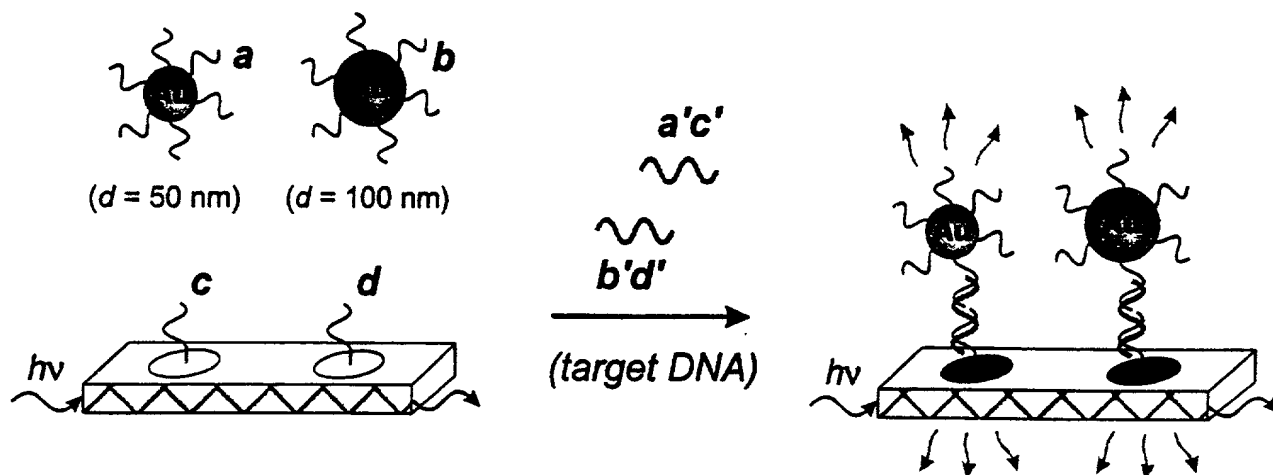
FIG. 60



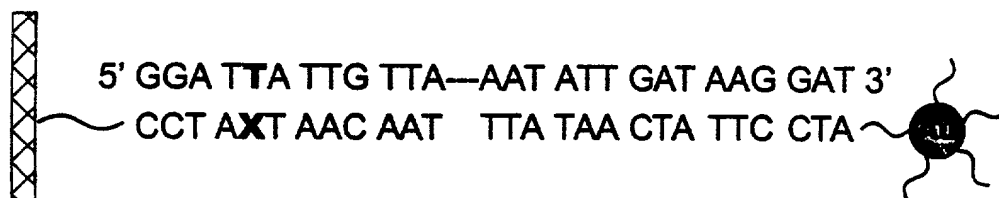
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Figure 6)

A



B



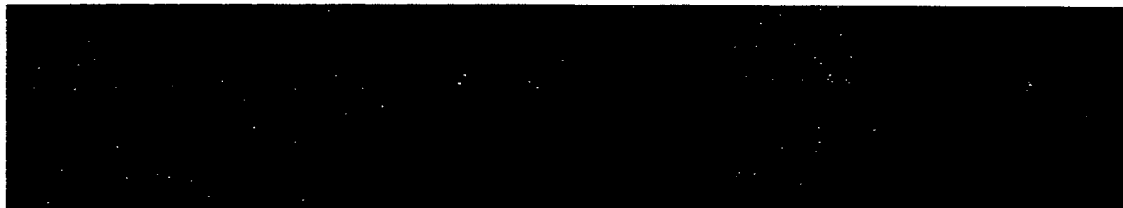
X = A (complementary),
G,C,T (mismatched)

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Test for Target
Sequence $a'c'$

Test for Target
Sequence $b'd'$

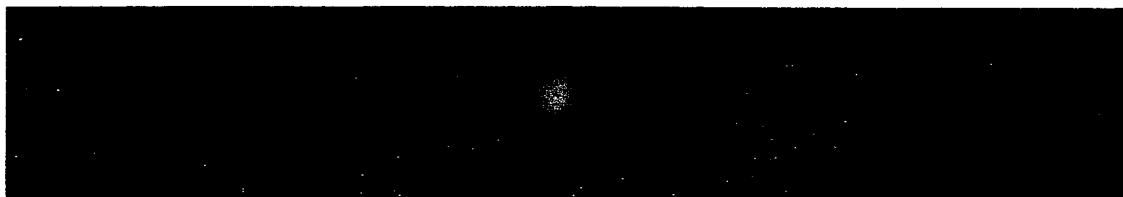
A



B



C



D



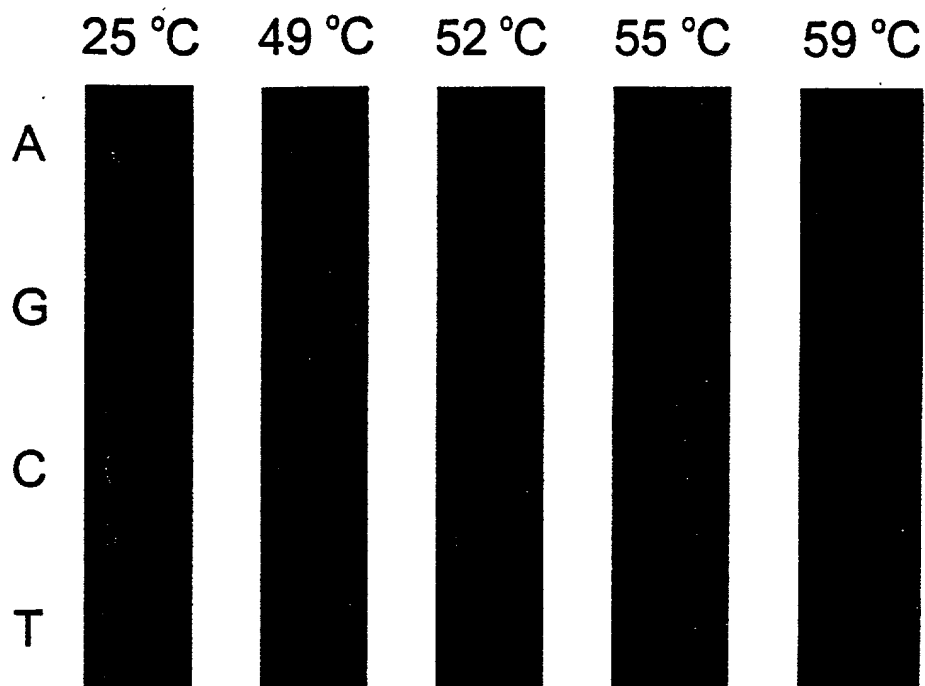
Figure 62

G. Lu, T. A. Taton and C. A. Mirkin

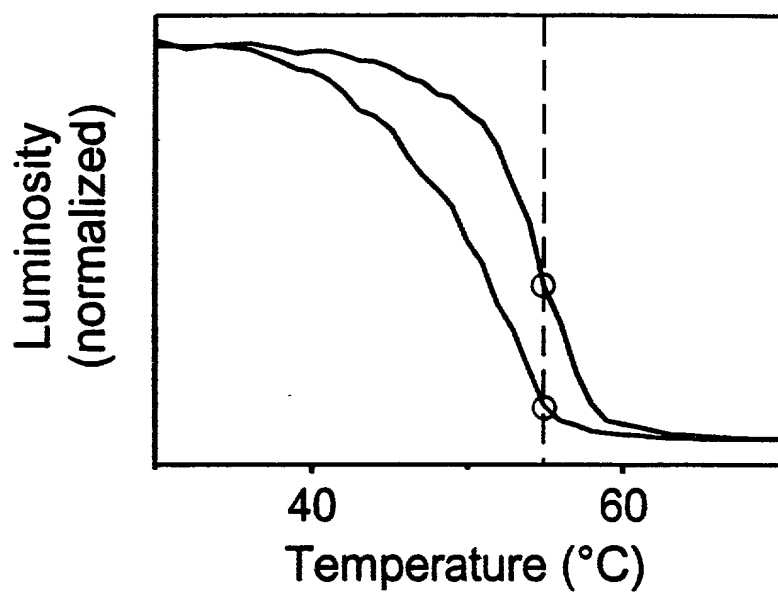
10008978-120701

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A



B

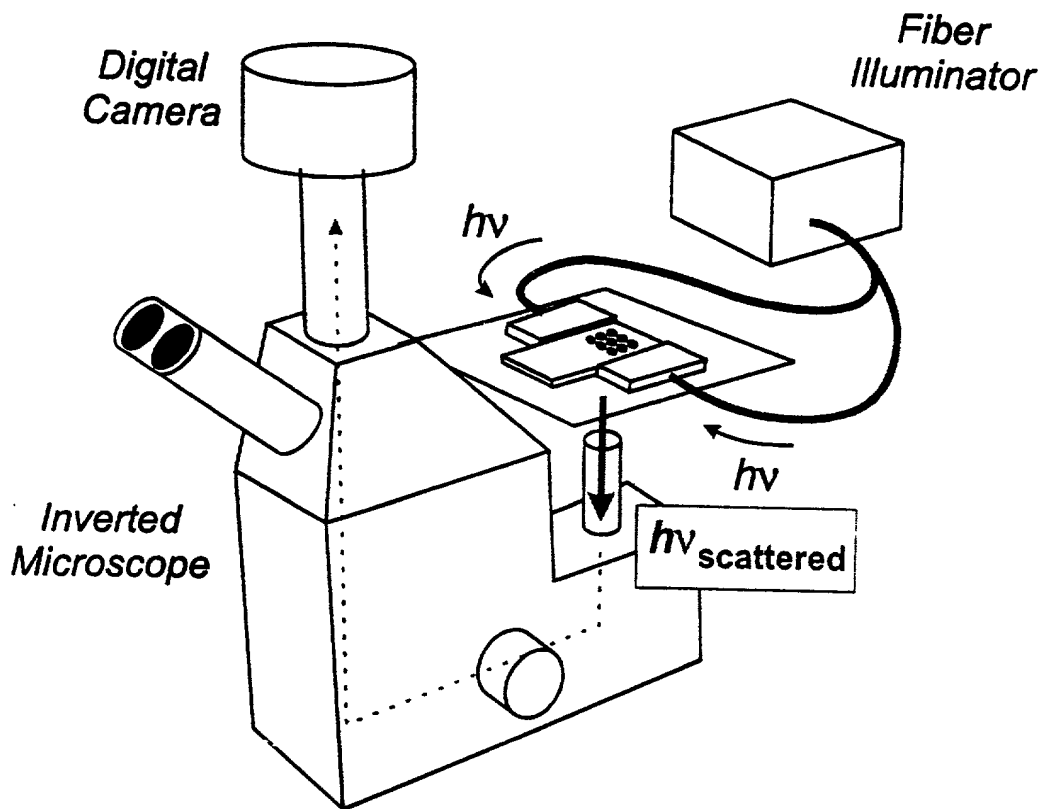


G. Lu, T. A. Taton and C. A. Mirkin

Figure 63

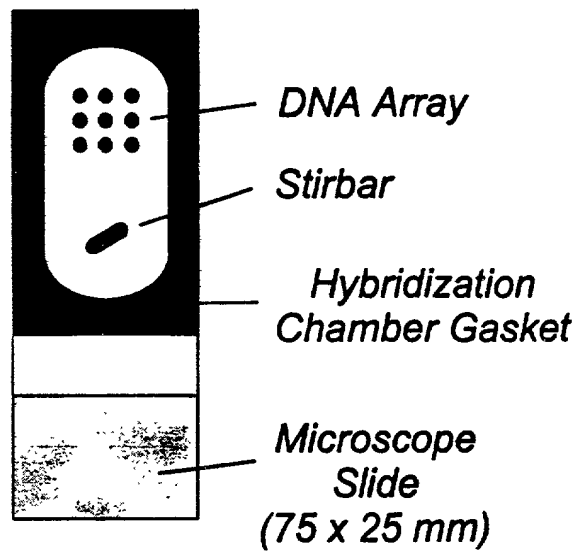
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Figure 64

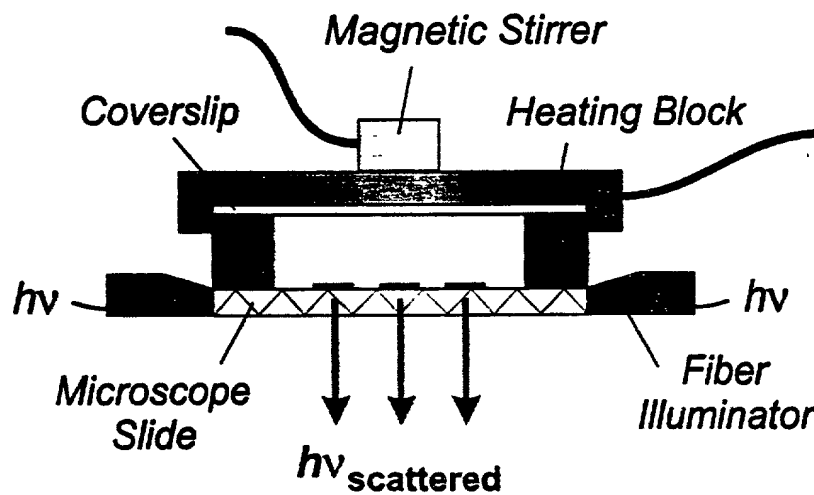


10006978-120701

A



B



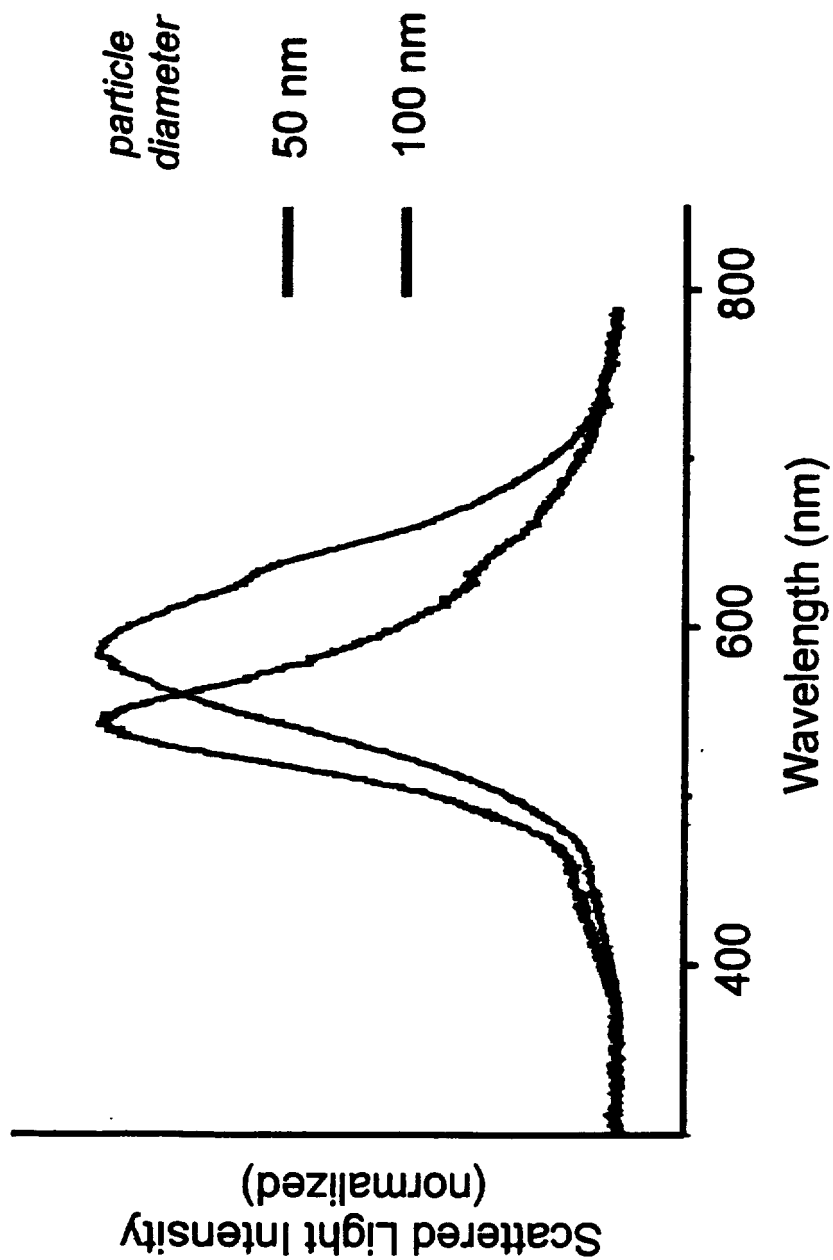


Figure 6b

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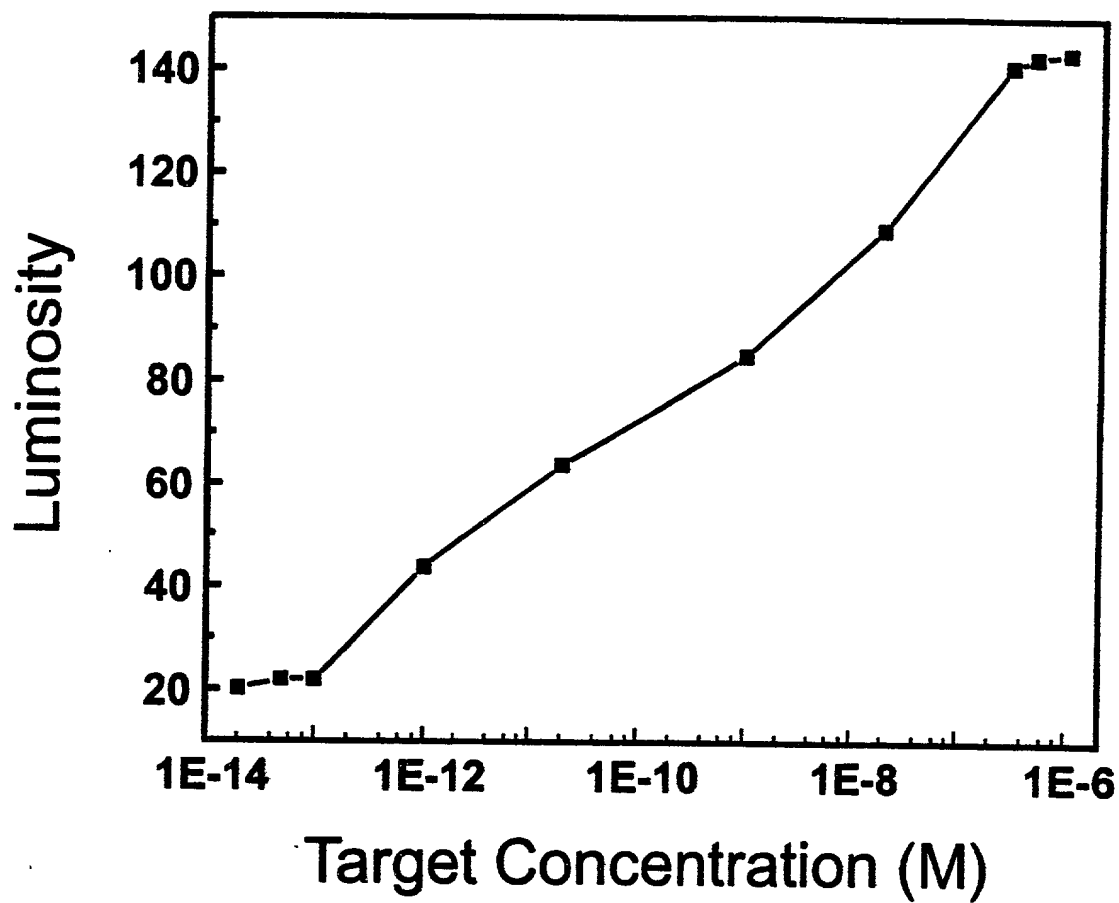


Figure 67